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Hazardous Waste Management in the Pacific Northwest. Final Report Findings and Recommendations

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Hazardous Waste Management in the Pacific Northwest

Final Report: Findings and Recommendations

Presented By:

U.S. Environmental Protection Agency, Region 10
and
The States of Alaska, Idaho, Oregon, and Washington

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EPA and the four Pacific Northwest States of Alaska, Idaho, Oregon and Washington joined together to assess current and future issues and to explore the opportunities associated with hazardous waste in the Pacific Northwest.

A product of two symposia, concurrent research and a dialogue begun a year ago among officials in government, industry and environmental groups interested im mangagement of hazardous waste in the Pacific Northwest, this report explores data/capacity assessment, waste reduction and siting of new facilities. Recommendations include establishing a Pacific Northwest Hazardous Waste Advisory Council, developing a waste reduction strategy, performing additional analysis of regional wastestream and improving Northwest data collection systems.

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Hazardous Waste Management in the Pacific Northwest

Final Report: Findings and Recommendations

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March 1988

U.S. ENVIRONMENTAL PROTECTION AGENCY
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March 14, 1988

REPLY TO
ATTN OF: SO-125

Dear Reader:

We are pleased to present the final report on the two symposia held last year concerning the future of comprehensive hazardous waste management for the Pacific Northwest. In this report, you will find a description of the process used to bring regional leaders together to discuss the current waste management system and the findings and conclusions we have drawn from this interaction and our own research. A set of recommendations, focusing in particular on how to enhance regional coordination on hazardous waste issues, is included as well.

We hope that you find this summary document useful. A comprehensive hazardous waste management system for the Pacific Northwest is definitely warranted and development of the right mix of environmentally sound waste management options, including waste reduction, is an achievable goal. We look forward to working together with you as we develop regional approaches to hazardous waste management for the Pacific Northwest.

Robie G. Russell
EPA Regional Administrator,
Steering Committee Co-Chair

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EXECUTIVE SUMMARY

This report is the product of a dialogue begun a year ago among officials in government, in private industry and in environmental groups interested in improving the the management of hazardous wastes in Washington, Idaho, Oregon and Alaska, the four states that make up the Pacific Northwest regional jurisdiction of the U.S. Environmental Protection Agency (EPA). The findings and recommendations in the report come from efforts of the past year, particularly from two regional symposia and concurrent research about hazardous waste management practices and issues in the Pacific Northwest.

BACKGROUND:

EPA and the four Pacific Northwest states joined together to assess current and future issues and explore the opportunities associated with hazardous waste management in the Pacific Northwest. Regional leaders wanted to know how successful state and national efforts have been in developing an overall system to regulate current waste practices and reduce the generation of hazardous waste by integrating waste reduction practices into industrial production. Individual hazardous waste management components are frequently shaped by different laws and advocated by different constituencies and can work against one another if not coordinated within a broader policy context.

Other necessities reinforced policy-makers' desires to assess the adequacy of comprehensive hazardous waste management within the Pacific Northwest. The U.S. Congress recognized the importance of building an overall hazardous waste management system when it reauthorized the Superfund statute in 1986. Each state must now provide assurances that it has access to treatment and disposal capacity sufficient to handle the hazardous wastes expected to be generated within the state for the next twenty years. Failure to do so by late 1989 can result in loss of federal Superfund cleanup money.

PROCESS:

The U.S. EPA, Region 10 proposed this regional analysis of the hazardous waste issue. EPA, in conjunction with the four states, hosted two policy level symposia in 1987 to discern if a regional undertaking was desirable and feasible. These symposia, based on input from a select Steering Committee, were directed to key leaders and decision-makers in local, state, and federal government, industry and environmental groups. The symposia brought together over 700 elected officials, industry leaders and entrepreneurs, environmental and civic activists and government regulators. The symposia exposed these leaders to experiences from around the country, shedding new light on the three primary issues which determine how development of a comprehensive waste system should be addressed: data/capacity assessment, waste reduction, and siting of new facilities.

ISSUES AND FINDINGS:

Data/Capacity:

Research results and symposia discussions focused on some basic questions associated with the Pacific Northwest's current hazardous wastestream: How much waste, of what type, is being generated? How and where is it being treated or disposed of? Such information is needed to accurately evaluate the current adequacy and availability of hazardous waste treatment and disposal capacity, to assess waste reduction opportunities and target the technical assistance to foster it, and to determine the nature and extent of interstate movement of our hazardous waste from generation to disposal. Following are some of the key findings related to data and treatment and disposal capacity:

- Interstate movement and management is a major feature of the Pacific Northwest's hazardous waste system. Of the approximately 225,000 tons of waste generated in the Region in 1985, almost forty percent were treated or disposed of in another Northwest state.

- Current hazardous waste land disposal capacity in the region appears to be sufficient for Pacific Northwest generators for the life of current landfill permits (10 years) and beyond, if new permits are applied for and reissued.

- Commercial off-site hazardous waste incineration capacity does not currently exist in the region, and more research is necessary to determine what sized market area would have to be served to support a commercial off-site incinerator in the Pacific Northwest.

- Further analysis of the Pacific Northwest hazardous wastestream is needed. More compatible data management systems among the states and EPA are needed to readily access and compare data on current waste generation and management capacity, and to better estimate capacity projections.

Waste reduction:

Waste reduction must be a key element of any progressive hazardous waste management system. The symposia explored opportunities for and barriers to greater reliance upon waste reduction. They included presentations on the role of public policy and private initiative in successfully reducing hazardous waste volumes and toxicities. Strategies of action for waste reduction at the local, state and federal level were also discussed. Following are some of the key findings from the symposia and research efforts:

- Public sector waste reduction efforts within the four states and EPA have been limited to date, but the pace and breadth of effort is increasing. Government can and should do more to foster waste reduction.

- Regional coordination and economies of scale can improve assistance

to industry, especially given the limited resources currently available to develop waste reduction programs.

- While individual industrial leaders have achieved some impressive waste reduction results, waste reduction efforts do not appear to be a regular element of the hazardous waste management practices of the majority of generators (particularly small generators). Ways must be found to accomplish this.

Siting of New Capacity:

Most efforts nationwide to site hazardous waste facilities involve private developers initiating proposals and then seeking authorization from local, state, and federal authorities. However, the regulatory processes designed to make decisions on land use suitability and regulatory sufficiency of such proposals invariably become involved in other issues, including the question of facility "need". Facility "need" is quickly linked to how aggressively waste reduction is being pursued by an industry or region. Other issues must be addressed as well, including how to balance public and commercial benefits with local risks and impacts. Symposia presentations documented some of the experiences of private and public developers and state siting authorities in dealing with these kinds of issues. Findings included the following:

- Siting new hazardous waste management capacity is clearly controversial. Determining facility "need" and the process of selecting and then involving host communities in the development and operation of the facility are the two main issues of concern.

- Regional cooperation in researching market size for Pacific Northwest treatment or disposal facilities, and in keeping states abreast of each others' siting related efforts, would be beneficial.

- New capacity is viewed by many as a "last resort". Before gaining support for the siting of new capacity, it may be necessary to demonstrate progress in waste reduction efforts.

RECOMMENDATIONS:

Based on these findings, a set of recommendations has been developed which can move efforts forward over the next few years (Recommendations are discussed more fully in the body of the report, at pages R-14 to R-19).

1. ESTABLISH A PACIFIC NORTHWEST HAZARDOUS WASTE ADVISORY COUNCIL:

The four states and EPA should establish a Pacific Northwest Regional Hazardous Waste Advisory Council. This Council can assure that attention is given to the goal of developing a comprehensive regional waste management system where practicable; promote regional coordination and cooperation on individual system elements; provide a vehicle for continued dialogue and education among interested parties on major issues; and focus attention on the

resources needed to produce system results acceptable to all user groups -- regulatory agencies, industry, legislative bodies, and the public.

2. DEVELOP A WASTE REDUCTION STRATEGY:

Waste reduction programs should be initiated at the federal, state, and local level. The federal level should focus on policy development, research, technical assistance and financial assistance to states. The state level should concentrate on exploiting regional economies of scale in program development, and provide technical assistance, in-plant and demonstration projects, and financial incentives to generators. Local jurisdictions should be particularly responsive to small quantity, small business and household generators, who also need help in proper disposal as well as in waste reduction. Industry should be involved in these program development efforts, and should work with regulatory agencies to assure the fullest integration of waste reduction activities into ongoing pollution control efforts. All parties should provide education to the public on the benefits of and limits to waste reduction.

3. PERFORM ADDITIONAL ANALYSIS OF REGIONAL WASTESTREAM:

Additional data analysis should be performed to refine our understanding of the Pacific Northwest hazardous wastestream. This data analysis should enable the states to estimate reliably their treatment and disposal capacity needs, and to characterize the wastestreams that are amenable to waste reduction.

4. IMPROVE NORTHWEST HAZARDOUS WASTE DATA COLLECTION SYSTEMS:

Systems should be developed, and data gathered in a way that produces compatible information among the four states. This would enable states to report and analyze information in a more consistent fashion, yielding useful information about the nature, movement and disposition of Pacific Northwest wastes, without unduly burdening industry.

CONCLUSION

More than two billion dollars a year are currently spent in this nation to rectify the damage from past hazardous waste handling. The recommendations in this report will cost a modest amount of money to implement. The States and EPA Region 10 are preparing a funding proposal to allow for start up of the Regional Council, continue data analysis efforts, support state efforts to meet the Superfund hazardous waste capacity assurance requirement, and increase waste reduction efforts and coordination.

There is a widespread desire to improve hazardous waste management in the Pacific Northwest. The efforts of 1987, coupled with a common vision and commitment to comprehensive hazardous waste management, will help future endeavors to solve these important dilemmas.

FINAL REPORT: FINDINGS AND RECOMMENDATIONS

A. INTRODUCTION

1. BACKGROUND

The national scheme for managing hazardous waste has undergone major changes in the past four years. In the 1984 amendments to the Resource Conservation and Recovery Act (RCRA), Congress declared that reliance upon land disposal for management of untreated hazardous wastes must be diminished. A series of land disposal restrictions were imposed which require the Environmental Protection Agency (EPA) to either ban land disposal of entire classes of hazardous wastes or establish pre-disposal treatment standards for them.

In 1986 the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) was amended by the Superfund Amendment and Reauthorization Act (SARA). SARA also included provisions of major significance for the waste management options utilized as the nation cleaned up its existing hazardous waste sites. Since Congress did not want to see new Superfund sites created, it clearly made permanent on-site remedies the preferred alternatives for cleanups at existing Superfund sites. Congress wanted to prevent the creation of new Superfund sites by merely moving cleanup wastes off existing problem sites to soon-to-be problem sites.

In Section 104(k) of SARA, Congress has made another statement about hazardous waste management. Called the "SARA capacity certification requirement," it requires states to certify to EPA by October 1989 that they have sufficient treatment, storage or disposal capacity adequate to handle all hazardous wastes expected to be generated within the state over the next twenty years. States failing to provide adequate assurances to EPA could lose access to federal Superfund cleanup monies. (This SARA provision is included at Appendix I.)

While Congress was wrestling with these issues, each of the four Region 10 states (Alaska, Idaho, Oregon, and Washington) has been attempting to resolve hazardous waste management issues within their own statutory and regulatory frames of reference. For instance, Washington has established a priority waste management scheme, with source reduction as the preferred choice and land disposal only as a final resort. Oregon has developed its own waste reduction program; Alaska has initiated RCRA assumption program development; and Idaho has adopted an ambitious hazardous waste management policy plan. All four states have also enacted statutes that regulate the siting of hazardous waste management facilities, thus implementing their own individual siting processes. Community concern about the siting of commercial hazardous waste management facilities was growing as well, and the relationship of waste reduction efforts to the need for additional commercial waste management capacity was becoming a more important issue.

The states and EPA, Region 10, became concerned about the practical implications of the various new federal requirements and about events occurring within each of the states. A number of major questions regarding our individual state and collective "regional" hazardous waste management system began to coalesce, including:

- How would RCRA's new land disposal restrictions affect hazardous waste management capacity in the Northwest? Are major hazardous waste treatment and/or disposal capacity shortfalls imminent because of these requirements, and what steps are necessary to effectively address this issue?

  The restriction on land disposal of solvents and dioxins began on November 8, 1986, and this would be only the first of such restrictions which would ultimately affect treatment or disposal of nearly all EPA regulated hazardous wastes. Commercial off-site hazardous waste land disposal facilities do exist in two states in the Northwest; however, in general, off-site commercial treatment capacity is limited, and off-site commercial incineration capacity is currently nonexistent in the four states.

- Hazardous waste management practices would need to change because of the new federal requirements, but do we have adequate management alternatives, and what are their respective roles? How much can we rely upon waste reduction practices (source reduction and recycling) to reduce the need for treatment and disposal capacity? What is the appropriate priority of incineration within the scheme of hazardous waste management options? Is commercial incineration capacity in the Pacific Northwest necessary, and if so, for what market of generators? If commercial incineration capacity is needed, what processes best ensure that host community concerns and state or regional benefits will be balanced?

  A commercial hazardous waste incineration permit application has been submitted in Washington State, and another project has been proposed. The impact of waste reduction activities on the need for incineration capacity, and community participation in siting new facilities because of the perceived risk from such facilities, have become significant issues which demand attention.

- What are the regional aspects of hazardous waste management facing the states, industry and the public in the Pacific Northwest? In what areas and in what manner could interstate coordination and cooperation help the states individually and collectively address these issues? What information is needed about the Pacific Northwest hazardous wastestream to help assess both the extent to which a "regional" problem exists, and any subsequent need for interstate or regional cooperation? What role could the regional office of EPA play in supporting development of the appropriate hazardous waste management options in the Northwest? Could EPA assist the states in addressing the SARA capacity certification requirement or in promoting waste reduction activities?

2. REGIONAL EFFORTS THROUGH 1987

The Directors of the State environmental agencies of Alaska, Idaho, Oregon, Washington, and the Regional Administrator of EPA routinely meet to discuss issues of mutual interest. Since hazardous waste issues appeared ripe for significant regional cooperation, the Regional Administrator invited the four state directors to discuss the potential for a regional approach. As a result, a regional effort was intended in January, 1987 to bring together the regional leaders in the field to ascertain where we were headed, and what we needed to do in order to effectively address our waste management concerns. The results of this effort are briefly outlined below, with findings and recommendations following.

The Use of Symposia and Establishment of a Steering Committee.

The states and EPA decided to sponsor two symposia, one in Spring and one in Fall, 1987. The two symposia had as a basic goal the education of public and private sector leaders who were responsible for the policies and choices being made about the current and future hazardous waste management system in their state, locality or organization.

A four-state select Steering Committee was established to oversee the symposia. It was composed of sixteen members and co-chaired by the EPA Regional Administrator, Robie G. Russell, and the Director of the Oregon Department of Environmental Quality, Fred Hansen. The broad-based membership included representation from business, universities, non-profit organizations, environment/public interest groups, the private bar, and state and local elected officials. The members were instrumental in establishing the key themes of the symposia, and gave freely of their time to improve the quality of the program's events. (The Steering Committee roster is included at Appendix II.)

Both symposia were policy-oriented, intended for a specific audience of public and private decision and opinion-makers. The symposia did not dwell on the intricacies or difficulties of implementing existing law but focused, instead, on broader policy questions. The goal was to enlarge the common level of understanding about Northwest waste management issues among this leadership group, and to solicit input on what we needed to know and do to move forward. (A breakdown of the type of attendee representation at each symposium is at Appendix III.)

We wanted to learn if our targeted audience believed the current efforts mandated by RCRA, CERCLA and state law to correct past practices and change current ones would be successful in developing an economically affordable and environmentally acceptable waste management system for the Pacific Northwest. If these efforts did not appear to be generating adequate solution in a timely manner, we wanted to identify what combination of public policy and private sector responses would be needed to bridge the gap.

The first symposium was largely educational in nature, relying primarily on experiences and expertise from other parts of the country. Research and analysis was conducted in the interim based on the results of the first symposium. The second symposium focused on specific Pacific Northwest issues and solicited recommendations on a future course of action.

Four Key Themes: Data, Waste Reduction, Siting and Regional Cooperation.

It is hardly surprising that these were the issues around which the symposia's research and agendas developed. They are among the prominent public and private hazardous waste policy endeavors in each state, and they are explicitly related to in-state or regional efforts to address the SARA capacity certification requirement. Each is briefly discussed below.

- Data/Capacity Assessment: Development of appropriate hazardous waste management solutions requires sound supportive data and information. Each of the states and EPA have data reporting and management systems, yet little of these data is organized to enable easy compilation and analysis of the broader regional picture. Several questions surfaced in Steering Committee discussions. What do current data suggest about the characteristics of the region's hazardous waste generation and waste management capacity picture? Is the right mix of capacity options for our current and future wastestream available or being developed? Do the current data systems enable us to look comprehensively at the true nature of our hazardous waste market place? Are we in a position to effectively address the data requirements of the SARA capacity certification requirement? How can we get the states and EPA to share information more effectively?

- Hazardous Waste Reduction: Public sector waste reduction programs exist at the state level in two of our four states. Local or non-profit efforts are underway in several states and there are numerous industry and federal facility waste reduction programs throughout the region. Yet, state programs, and federal support for state programs in particular, are in their infancy, and little factual information is known about the "success stories" various generators have to offer. The public wants greater reliance placed upon waste reduction efforts, since the demand for successful waste reduction programs surfaces whenever siting proposals are presented. While industry is increasingly adopting waste reduction practices, it is concerned about a possible trend toward mandatory waste reduction. Industry also believes that inadequate incentives exist to spur waste reduction efforts.

  EPA, the states, the environmental community and industry share a common interest in pursuing responsible waste reduction efforts. Waste reduction clearly has to be a central component of any comprehensive waste management effort. Again, the Steering Committee raised pertinent questions: What can we learn from others states' experiences, given that the Northwest states do not yet have

well-developed waste reduction programs? What are the key elements of a waste reduction program and how does government ensure greater reliance is placed upon waste reduction by industry? What responsibility do government, interest groups, and the private sector have to provide the education and financial support needed to facilitate waste reduction research and implementation?

- Siting: Siting of existing and especially new hazardous waste management capacity has become a controversial undertaking. Discussion and education about siting issues, including the risk posed by the facilities and public participation in the decision process, are essential, and could be particularly useful if conducted outside the normal heat of battle over any individual proposal. We could also benefit from the experiences of other states and countries. Do we need any new capacity and if so, what type is needed and where should it be located? For what sized market should any needed facilities be built: each state, the region or some larger market? Do our individual state rules and siting processes square with the marketplace dynamics which our wastestream follows? What are the crucial elements of an effective siting process?

- Regional Coordination and Cooperation: Each of the four states is confronting these waste management questions within its own frame of reference. However, little effort had been put into investigating the interstate nature of our Pacific Northwest wastestream. The Steering Committee suggested that we identify interest in regional coordination; see what issues were logical candidates for such efforts; and consider the formal arrangements necessary to promote this cooperation. The questions specifically addressed were: Where do wastes go for treatment or disposal and how similar are the physical characteristics of each state's wastestream? What economies of scale could be achieved through regional coordination on data analysis or waste reduction service delivery? How would regional policy cooperation on capacity assessment, waste reduction and siting enhance the development and use of appropriate hazardous waste management options?

Symposia-Related Research:

The states, EPA and the Steering Committee identified a number of areas where research and issue papers could provide important background information and frame issues for the symposia. A few efforts were particularly important:

- A six-month study of the current regional wastestream and hazardous waste management practices in the Pacific Northwest was undertaken by Dr. Lee Stokes. This was the first regional analysis of its kind conducted in the United States. Its purpose was to: (a) characterize the current situation (volumes and types of wastes, management practices, interstate movement of wastes, etc.); (b) identify future wastestream and management capacity plans and needs, in part to prepare the states to address the SARA 20-year capacity assurance requirement; and (c) suggest how the current data systems

might be improved to characterize future needs and enable cross-state exchange and analysis of data. The report's results were delivered during the October symposium. (A copy of the report's Executive Summary is at Appendix IV.)

- A White Paper was prepared for the first symposium which described the various components of a comprehensive hazardous waste management system, and put the role of the symposia into context for the attendees.

- A research packet was prepared for the second symposium. Included were: summaries and tables identifying the current waste reduction, data management and siting activities and approaches of the four states; an issue paper on the importance of waste reduction in any comprehensive waste management system; and a second White Paper with regional data, waste reduction, and siting-related recommendations for attendees to consider.

Participation in the Symposia:

About 750 people attended the two conferences, attesting to the importance of these issues to our regional hazardous waste leadership. Of particular note was the interest shown by state and local elected officials. The Legislative Roundtable, held at the second symposium, included about 20 legislators from all four states, the four state environmental directors and the EPA regional administrator. (A list of Roundtable participants is at Appendix V). A number of issues were touched upon during the two hour session: How to deal with the interstate nature of the hazardous waste management "market" within the context of individual state siting processes and political pressures; how, as a result, the states might coordinate siting-related issues; opportunities for interstate cooperation in waste reduction; and the desirability and possible function of some regional advisory body or council to continue interstate dialogue. The Roundtable endorsed the idea of a regional advisory body. Considerable discussion involved what was the right mix of financial incentives (taxes, fees, rewards) to move hazardous waste management systems in a direction consistent with priority waste management schemes, especially waste reduction.

The second symposium also featured small group discussions to solicit recommendations from attendees on ideas for future action. Participants appreciated the opportunity to share views with their peers and colleagues. The findings outlined in the next section and the symposia evaluation form summaries (at Appendix VI) reflect the attendees' observations about what direction we should head. The comments evidenced a desire to fashion sensible, achievable solutions, and to promote interstate coordination, particularly in the areas of waste reduction and capacity assessment.

The high level of interest and enthusiasm of the symposia's participants was in large part due to the quality of speakers and panelists. Nationally prominent people in waste reduction, treatment and disposal, capacity assessment, and siting spoke at the first symposium. These speakers included directors of two of the leading state waste reduction programs (California and

North Carolina); the author of an analysis for the U.S. Congress on national hazardous waste management infrastructure needs; the head of the consortium of state hazardous waste siting agencies; and the operating manager for the group building a comprehensive hazardous waste management facility, including an incinerator, for the State of Arizona. The second symposium reflected the local and regional expertise in the Pacific Northwest, including representatives from some of the region's major commercial hazardous waste treatment and disposal firms; the chairs of Washington's Solid Waste Advisory Committee and of Idaho's Emergency Response Committee; and representatives of large and small industries who are innovators in waste reduction practices. Keynote speaker for the conference was Lee Thomas, Administrator of EPA. (A copy of the agenda for both symposia is included at Appendix VII).

B. FINDINGS

The two symposia and related research highlighted both the current situation in hazardous waste management in each state and the need for continued regional dialogue and cooperation. The findings of the regional effort to date are summarized below. (The status of state programs in each of these areas is listed at Appendix VIII).

1. DATA/CAPACITY ASSESSMENT:

Background.

Dr. Stokes' survey focused primarily on the existing data sources for hazardous wastes generated in the Pacific Northwest in 1985. (He also did a limited survey of public electric power utilities regarding PCB waste management practices.) The data came mainly from state and federal regulatory programs; hence they only reflect those wastes which are reported upon in compliance with state or federal law. Since only 1985 data is analyzed, the reader is urged to view the numbers presented below not as absolutes, but as indicative of a level of magnitude of waste generation. The waste management practices and waste movements revealed by the data should be seen in relation to each other, as well, rather than as fixed numbers for specific capacity assessment purposes. In particular, the volumes of Superfund and other cleanup wastes, small quantity generator wastes and unregulated household wastes used by Dr. Stokes must be seen as rough estimates at best, and not precise formulations. Analysis of additional years of reporting data would give a better indication of the range of reliability associated with the gross data, and this point is addressed in the recommendations section.

Waste Generation.

A total of 228,910 tons of hazardous waste was reported to have been generated in 1985: 1,609 tons (0.7%) in Alaska, 2,024 tons (0.9%) in Idaho, 26,813 tons (11.7%) in Oregon, and 198,464 tons (86.7%) in Washington (See Table 1. The Tables and Figures cited in this section of the report are

included at the end of this report, on pages R-21 to R-29). Eight hundred and eighty-two major generators produced reportable quantities of hazardous waste in 1985: 23 in Alaska, 30 in Idaho, 206 in Oregon, and 623 in Washington. Small quantity generators reported producing an additional 11,000-12,000 tons of waste, while it is estimated very roughly that 30,000-60,000 tons of unregulated hazardous waste from households were disposed of primarily in public solid waste landfills. The major generators represent most elements of industrial and community activities in the region, including manufacturing, trade, services, government, military, transportation, mining (include oil extraction) and electrical utilities. Manufacturing companies (504; 57%) and trade, services and governmental organizations (253; 29%) dominated the list of major sources in 1985 (Table 2). The manufacturing category included a large number of metalworking companies (126; 14.2%); other categories most frequently represented were chemical (69; 7.8%), wood products (56; 6.3%), electronics (68; 7.7%), and transportation equipment (43; 4.9%).

Waste Characterization.

About 700 specific chemicals have been listed by EPA as hazardous when present in waste materials. Various other waste components, when present in sufficient concentration, will produce hazardous characteristics. EPA and the Region 10 state agencies have described specific waste sources and waste types which are regulated in addition to the EPA-listed chemicals. Thus, the total number of chemical elements, compounds, and designated waste types reached well over 1,000. One hundred sixty-five of those specific waste types were generated in Region 10 in 1985. Washington reported wastes with 103 separate substances of waste types, 36 of which were present in amounts of one ton or more. Oregon's total was 62, of which 52 reached a ton or more. Ninety-four substances or waste types were produced in Idaho, but only 26 were present in the amount of one ton or more. In Alaska, 36 waste types were identified, 21 amounting to a ton or more.

Overall, the Region 10 hazardous wastestreams consist mainly of solid and semi-solid inorganic materials which are fairly stable chemically and are amendable to relatively uncomplicated management options. However, a small, but very significant organic fraction also occurs in various physical forms and sometimes is mixed with inorganics, including metals, presenting a complex management problem (See Table 3).

Waste Disposition.

On-site storage (for over 90 days) accounted for 107,000 tons of waste in the region in 1985, and 75,000 tons were stored off-site. The predominant storage method (by weight) was waste piles. Nearly 10,000 tons of waste received on-site treatment; 49,000 tons were treated off-site. On-site disposal of 63,000 tons of waste occurred while 77,000 tons were disposed at off-site facilities. Over 100,000 tons of Region 10 wastes were landfilled; 45,000 tons were impounded as a treatment process or final disposal; and 1,111 tons of waste were injected into deep wells in Alaska (See Table 4).

Interstate Movement of Waste.

The Pacific Northwest has a mobile, regional hazardous wastestream, whereby wastes destined for commercial off-site treatment, storage or disposal cross state lines with regularity and in significant volumes. Region 10 states regularly ship waste to one another and to facilities in other states for treatment and disposal. Waste is also imported into the region for disposal. Nearly 10,000 tons of waste were exported from the region in 1985, while 3694 tons were imported; thus, the region was a net exporter of hazardous waste. Alaska exported 10% of its waste to other Region 10 states and 40% to states outside the region. Idaho exported one-half of its waste to Oregon and Washington and 38% to states outside the region, but also imported twice as much waste for disposal as was exported. Oregon exported over one-third of its waste (9,000 tons, with 5,500 tons going to Washington and 3,500 tons exported out of the region), but imported nearly 66,000 tons for disposal, most of which came from Washington. Washington exported 62,000 tons to Oregon, 2,700 tons to Idaho, and 5,000 tons to states outside the region, and imported 6,000 tons of waste for treatment (See Table 5 and Figures 1-4).

Capacity Assessment:

Oregon and Idaho received large volumes of wastes from the other states because a privately-owned commercial off-site hazardous waste landfill is located within each state. Research indicates that based on projected fill rates, sufficient capacity exists in these two landfills for the life of their permits (up to 10 years) and beyond, (if new permits are submitted and approved) to handle at least Region 10 generators' land disposal needs (See Figures 5 and 6). Off and on-site storage capacity also appears adequate based upon review of permit applications and actual use figures.

No off-site commercial incinerator capacity exists in the region at this time. One project has applied for a permit within Washington State. Another Washington based project is in the site selection phase. Including contaminated soils, and projecting cleanup waste volumes, up to 60,000 tons of hazardous wastes per year might be available for incineration, though it is not known if this is the optimum treatment method for all these wastes. The developers of the two incinerator projects have each indicated that Region 10 wastes alone would support only one incinerator. (The two proposed Washington incinerator projects include a landfill as part of their operation, as well, thus adding to the region's landfill capacity if either project receives approval.) Most materials from the Pacific Northwest which are incinerated now go to Illinois, Arkansas, or Texas. There are approximately twelve other incinerator proposals pending in EPA Regions 8 and Region 9 (which, along with Region 10, make up the thirteen western States), indicating that the picture for incineration capacity closer to Pacific Northwest generators may soon change.

Estimates of other treatment capacity are based upon review of existing facilities, requested permit applications, and some reflection about the range of wastes potentially affected if the proposed land bans indeed go into effect, hence requiring those wastes to receive treatment prior to disposal. Excess capacity (relative to projected waste generation) for neutralization of liquid corrosives with or without metals will be available if permits are

issued for facilities existing or proposed in Idaho, Oregon and Washington. No deficiencies are apparent in the systems available to handle oils, solvents and cyanide, although the existing facilities are located mostly in Washington. While some capacity to chemically treat organics exists, little was learned about the scope of those capabilities during this assessment.

The crucial questions regarding treatment, storage or disposal capacity in the Pacific Northwest thus appear to be: (1) What volume of incineration capacity is needed by the region's generators, and is it to be developed in-region? and, (2) Are there sufficient treatment options - especially for inorganic metal bearing wastes - so that only treated or otherwise neutralized and solidified wastes eventually receive land disposal?

Management Information Needs.

Even as this capacity analysis sheds great light on the existing Northwest wastestream, Dr. Stokes' study also highlights the deficiencies in the current data systems of EPA and the four states. The states in Region 10 currently collect, process, and use data differently. This is due to the different universe of hazardous waste regulated by each state in the region; state priorities and needs; and the financial resources devoted by each state for data programs. In addition, most of the state and federal waste reporting forms focus primarily on an individual company's waste generation and are not designed for assessing or projecting regional capacity.

Dr. Stokes concluded that due to the regional nature of the wastestream in the Northwest, data should be collected by states and EPA by methods and at a level of detail that are compatible, so that a dynamic regional analysis of the wastestream can be conducted. An adequate understanding of the wastestream would entail knowing accurately the origin, type, volume, and ultimate disposition both by location and method of treatment or disposal.

2. WASTE REDUCTION.

Most information on the applicability of waste reduction techniques on the Pacific Northwest wastestream is anecdotal, and is not organized systematically. Yet one is still struck by the varied practices and dramatic results reported by those businesses and government agencies in the Pacific Northwest which shared experiences about waste reduction practices they have initiated. Those efforts are successfully reducing regulatory costs, affording superior environmental protection, and providing an attractive alternative to waste treatment or disposal options. Almost as striking is the historic lack of emphasis on promotion of or requirement for waste reduction within state and federal environmental agencies. For example, federal funding for state and local waste reduction programs has been virtually nonexistent until recently. The states of the Pacific Northwest and EPA Region 10 are beginning to break out of this pattern. Two states - Oregon and Washington - are on the verge of launching comprehensive waste reduction programs, and Idaho and Alaska are continuing to support pilot projects: all with some federal assistance. Such programs can include hotlines, technical clearinghouses, in-plant technical assistance, demonstration projects, financial assistance, and public recognition and education programs.

Significant barriers to further reliance upon waste reduction still exist in both industry and government. These include a lack of understanding of the benefits from waste reduction, lack of information about available technical options, lack of technical expertise and capital to implement new production processes, and a historical emphasis in environmental law on pollution control and treatment, rather than pollution elimination. These barriers can be successfully eliminated, but only with a consistent and persistent collaboration among industry, government and public interest groups.

How far waste reduction can go in eliminating the need for TSD capacity is hotly debated. It is clear that the economics of waste disposal is crucial in shifting attention towards waste reduction activities as a cost effective alternative. On the one hand, some have argued that the complexity of the RCRA permitting process for treatment and disposal facilities and the increasing cost of disposal from land bans, etc., are designed to force implementation of waste reduction practices. Others contend, however, that RCRA, by requiring generators to comply with various administrative requirements (which may not result in readily apparent benefits to the environment), shifts scarce resources away from researching and implementing waste reduction measures. The fact of the matter is that for a variety of reasons, disposal costs are increasing and waste reduction efforts are becoming more attractive and more frequently pursued. Whether or not the aggressive implementation of waste reduction practices throughout industry, and on all applicable wastestreams will significantly reduce the overall need for specific types of treatment or disposal capacity is still an open question. Factors such as costs, rates of economic growth, market area served by the facilities, economies of scale for operation, etc., all will have a bearing on this vital question.

Several findings can be drawn about the nature of waste reduction in the Pacific Northwest:

- A comprehensive waste reduction program is essential for the development of an overall waste management system. Waste reduction may provide superior environmental protection, reduce future liability, decrease on-going disposal costs and needs, and build public confidence in addressing crucial siting questions.

- Industry interest groups, and government must work together to develop, implement and promote waste reduction programs if they are to be effective with the broad base of waste generators, and not just the most progressive industries.

- Waste reduction efforts must be designed to result in a net decrease in the threat to the environment, and not merely transfer pollutants from one media to another (i.e., from air to water), nor reduce the volume of waste while concentrating its toxicity.

- Due to the relatively small number of generators in most of our states and the basic similarities of the region's wastestream, the potential benefits from economies of scale justify consideration of a regional program to help foster waste reduction.

- Many waste reduction and in-plant recycling efforts do not conflict with existing regulatory laws, such as RCRA. Source reduction modifications do not even need regulatory approval prior to implementation. However, generators must be able to determine quickly if a given proposal must go through the traditional (and often lengthy) permit review process.

- Data collection which documents the results of waste reduction programs is a long term need, and should be integrated into the efforts to improve understanding of the region's overall waste stream.

3. SITING TREATMENT AND DISPOSAL CAPACITY

Siting-related issues are perhaps the most difficult about which to draw firm conclusions. Fundamentally, there is no "correct" siting process, and no formula exists for generating the "right" answer on any given proposal. Since federal law required all existing treatment storage and disposal facilities to apply for permits or close down, there are now approximately 150 RCRA treatment, storage or disposal facility permit applications pending in Region 10. The primary, though by no means exclusive, public concerns about siting are associated with large, commercial off-site facilities. The symposia presented a full range of issues and options associated with siting strategies. However, three issues were particularly relevant:

Need:

Is the facility needed, and if so by what market of generators? Although there is no apparent enthusiasm for publicly-owned or operated facilities in Region 10, there is an overall reluctance to let the marketplace alone determine the number of facilities sited here. Many are concerned that the Pacific Northwest might treat or dispose of significant quantities of wastes from outside the region if large commercial facilities are permitted in the region. Transportation issues assume great significance in this regard. Both Oregon and Idaho law make reference to regional wastestreams as the sole market source for new facilities. Hence, the question of need for a facility is intimately linked to the determination of the area which the facility is designed or allowed to serve.

Equity:

How are local or regional concerns about impacts from a proposed facility balanced with the economic benefits to be derived by the owner and the general public from the facility? Local siting opposition often stems from a state's or developer's approach to this question. A broader equity issue exists among states. Is it fair for one state to be the disposal site for other states' waste? For example, Washington State's generators produce the vast majority of wastes which go to the Oregon and Idaho landfills (and in a similar vein Washington receives the low level radioactive wastes from these - and other - states.) One strategy to obtain equity among states is to require through federal law that each state take care of its own capacity needs unless it reaches an understanding with another state to accommodate its wastes. This is the intent of the SARA capacity certification requirement discussed previously.

Citizen Participation:

How can local citizens and communities meaningfully participate in siting proposals and subsequent regulatory decisions? All four states have different approaches to this question. Techniques such as formal negotiation, impact mitigation, and financial compensation are being used more frequently around the country in an attempt to obtain agreements with local governments and residents that allow projects to receive local endorsement. Although no one process "works" in all cases, experience shows that projects which treated communities, developers and regulatory agencies as equals fared better than others. The Arizona and Alberta, Canada case studies presented at the symposia support this conclusion.

Two final observations regarding siting are pertinent. First, due to the dynamic regional nature of the wastestream in the Pacific Northwest, actions in one state regarding siting capacity can have significant impact on another state's generators. For example, if market boundaries for existing facilities were somehow constrained to stay within the resident state, the existing wastestream flow would be severely disrupted. This reality, along with the SARA capacity certification requirement, will cause Pacific Northwest states to document their interdependence for disposal capacity, and to share perspectives on siting processes and/or specific proposals. Second, the need to handle household wastes and other smaller unregulated quantities of hazardous wastes properly will pose siting and system delivery issues for local and state governments. Protection of the environmental integrity of public landfills is a growing concern. At a minimum, transfer stations, with reliable pickup schedules and storage requirements, appear necessary to enable state and local governments to meet this waste disposal and public health challenge.

4. REGIONAL COORDINATION

Continued regional coordination, cooperation and dialogue are clearly needed and welcomed, as demonstrated by the enthusiasm and comments from symposia attendees. The legislators participating in the Roundtable requested it. The interdependence of the region due to the nature of our wastestream, and the economies of scale that could be achieved on projects such as waste reduction, data analysis, and SARA capacity certification, justify it. The historic benefits to the Pacific Northwest from regional cooperation on other issues, such as low level nuclear waste disposal and hydroelectric power planning, suggest a similar approach for addressing interstate hazardous waste concerns in the region. The difficulties associated with siting new capacity anywhere and the concerns over the market boundaries for such facilities demand it.

In the next section of this report, we list the recommendations resulting from the symposia and address the question of what is the proper way to achieve this regional coordination.

C. RECOMMENDATIONS

The following recommendations are based upon the input from conference speakers and attendees, the Steering Committee, and the State and EPA personnel working in the hazardous waste field. They are designed to demonstrate what can be done in the short-term (next nine months) and the mid-term (one to two years) to improve development of a comprehensive hazardous waste management system for the Northwest. We anticipate that appropriate long term objectives and tasks will be generated by the process itself in the coming years. The term "hazardous waste management system" is used to convey the scope implied by the sum of wastestream data system, waste reduction, waste recycling, waste treatment and destruction, and waste disposal efforts. A comprehensive hazardous waste management system would achieve adequate environmental protection either by eliminating wastes in the first place or by recycling, treating, destroying, or disposing of them properly.

Our recommendations were developed with the following questions in mind:

- What general improvements or modifications should be considered for the current data, waste reduction or siting efforts?
- How will pending national EPA initiatives affect us and how can the Pacific Northwest best influence national policy?
- What regional effort, cooperation or coordination (if any) can foster economies of scale, improve service delivery, or elevate the policy debate on waste management issues?
- What additional resources or funding would be necessary to implement the recommendations?

1. ESTABLISH A REGIONAL ADVISORY COUNCIL

The four states and EPA should establish a Pacific Northwest Regional Hazardous Waste Advisory Council. This Council should assure that attention is given to the goal of developing a comprehensive regional waste management system where practicable; promote regional coordination and cooperation on individual system elements; provide a vehicle for continued dialogue and education among interested parties on major issues; and focus attention on the resources needed to produce system results acceptable to all user groups: regulatory agencies, industry, legislative bodies, and the public.

Purpose: Almost all attendees, including elected officials, believed that the symposia afforded a beneficial opportunity for people to get together, hear each other's viewpoints, and exchange ideas or build common ground on major issues or concerns. Institutionalizing this opportunity under a regional advisory body could be of great benefit in future. Most attendees also wanted to see action on the pressing questions facing the Pacific Northwest, be it in waste reduction, capacity assessment or the possible siting of new facilities. There was no recommendation, nor do we see a need, for a regional decision-making body that becomes another level of government before such action can occur. Rather, the Regional Advisory Council could

focus attention on the issue of system development; identify trends in waste management of interest to all parties; stimulate research and education so that decisions made by other parties and in other forums are well informed; and promote regional coordination and cooperation in those areas where it is practicable and efficient to do so.

Structure: The Regional Advisory Council should be large enough to assure an adequate representation of the broad range of interests in each state, and small enough to be an efficient body. We recommend that each state and EPA have up to four representatives on the body, with an additional chair and vice-chair being appointed, one from Washington and one from Oregon. The state appointees should be selected by the governors of each state, and the EPA appointees selected by the Regional Administrator. This type of body would function well, and would enable the Regional Advisory Council to have a mix of state and local elected officials, Indian tribal and industry representatives, environmentalists, federal facility operators, and others necessary to promote effective, broad-based dialogue. This type of representation is necessary so that the Regional Advisory Council is able to represent all perspectives, and tackle the full range of issues surrounding hazardous waste management.

Function: The Council could have at least five functions in the next few years:

a. Waste Reduction: The Council could promote waste reduction opportunities at all levels of government and with industry. As regional coordination is established, in particular, the council could endorse or co-sponsor training and educational workshops or conferences with trade associations, universities, government, and others. The Council could advise on the roles government, interest groups, and the private sector should take to gain wider usage of waste reduction practices.

b. SARA Capacity Assurances: Each state must provide such assurances by October, 1989. Interstate analyses, agreements, and assurances will be necessary to do so successfully in the Pacific Northwest. States will be required to describe their existing and future wastestream; project current or anticipated capacity needs in relation to existing treatment and disposal capabilities (seen in light of waste reduction programs); and provide for the development of new capacity, if shortfalls are anticipated. The Regional Advisory Council could advise the states on the development of these interstate analyses, agreements and assurances. In particular, the Council could assist in the question of market boundaries that make sense for assuring adequate commercial facilities for this region's generators, while not attracting inappropriate volumes of out-of-region waste for treatment or disposal here. The Council could act as an "early warning system" if capacity shortfalls can be anticipated in the region, and advise decision-makers on options to avoid this "gridlock."

c. Research: The Council could recommend research efforts to EPA, the states, trade associations, and universities, that are designed to gain a better understanding of the Pacific Northwest wastestream, and to assist in elucidating the policy alternatives facing decision-makers as they develop the optional mix of hazardous waste management options. Examples of the research could be the data needs described in 2 above; financial and other incentives/disincentives appropriate for generators to promote waste reduction; transportation issues surrounding commercial off-site facilities; or barriers to innovative waste reduction or waste treatment options.

d. Forum for Dialogue: The Council could provide the forum for continued dialogue on regional waste management issues. Each state has mechanisms for fostering such dialogue concerning the development of waste management policy within each state. What is needed is a similar opportunity for regional issues and concerns to be discussed. For example, the Council could host periodic symposia similar to the ones just held in order to update the targeted audience on policy trends and to get a reassessment of our overall progress in system development. Similarly, the Council could develop out-reach task forces with local government, industry groups, environmentalists or other interest groups to focus on specific issues, be they data survey instruments, waste transportation issues or waste reduction workshops. The meetings of the Council would establish periodic information sharing and opportunities for dialogue among elected officials, industry, environmental groups and regulators on a routine basis.

e. Perspective on Federal Law: Symposia participants described a full range of topics to within which a common ground can exist: waste reduction, use of data, and effective siting procedures. Most participants also described some aspect of federal law which was extremely frustrating to them, or which thwarted their perceived policy goal of the overall legislation. A strong national regulatory program which tracks and monitors the proper handling, treatment and storage of hazardous wastes is necessary to assure progress in hazardous waste management. The Regional Advisory Council could be a voice if aspects of federal law are contradictory to our common goal of system development in the Pacific Northwest. These insights could be useful to EPA and to the Congress as such laws as RCRA, CERCLA and TSCA are reauthorized.

2. DEVELOP A WASTE REDUCTION STRATEGY

Waste reduction programs should be initiated at the federal, state, and local level. The federal effort should focus on policy development, research, technical assistance and financial assistance to states. The states should concentrate on exploiting regional economies of scale in program development and provide technical assistance, in-plant and demonstration projects, and financial incentives to generators. Local jurisdictions should be particularly responsive to small quantity, small business and household generators, who also need help in proper disposal as well as in waste reduction. Industry should be involved in these program development efforts, and should work with regulatory agencies to assure the fullest integration of waste reduction activities into on-going pollution control efforts. All parties should provide education to the public on the benefits of and limits to waste reduction.

Short-Term:

a. Based on current knowledge of the wastestream, government should target selected wastestreams (including both large and small generators) for immediate reduction assistance through clearinghouse information, workshops, in-plant assistance, corporate task force projects, and other appropriate activity. As the results of research referred to in 3(d) below come in, these strategies can be refined. Waste reduction is happening now and can continue to expand. Targeting waste streams can focus scarce resources, provide documented successes more quickly, and harness industry's cooperation in working with firms most in need of assistance or most reluctant to improve.

b. The State and EPA should meet to ascertain how regional coordination can improve the efficiency of service delivery in waste reduction. A regional resource center, shared newsletters, hotlines, conferences, workshops and awards for progress may be examples of ways to spread resources further and promote broader educational efforts.

c. EPA RCRA or state siting authorities should establish a fast track review process for determining how reuse, recycling, and in-plant modifications that promote waste reduction can be accommodated or expedited under existing law.

Mid-Term:

d. Sponsor local government workshops within the region to demonstrate and share ways that local and state governments can and have improved waste handling and waste reduction programs for small generators and household wastes. Anchorage, Alaska in particular provides an innovative model for how improvements to the local solid waste system can incorporate proper hazardous waste handling, disposal and reduction practices in a routine manner.

e. Work with universities to establish training programs and degree programs that educate and place students in waste reduction technical careers. The availability of trained personnel within engineering and scientific disciplines makes it significantly easier for industry to integrate waste reduction into ongoing management objectives.

f. Research the feasibility of establishing a "materials exchange system" for the Northwest. A material waste exchange is a clearinghouse in which potential users of selected chemicals or metals are put in touch with generators whose waste contains those chemicals or metals. Users may be able to pick up source materials more cheaply, while generators may avoid disposal costs by marketing a now useful product. The environment can benefit from such exchanges because the previous waste materials are kept in productive use rather than being discharged as waste. A number of hurdles must be cleared if the Pacific Northwest is to establish a materials exchange system, most notably liability questions.

3. PERFORM ADDITIONAL ANALYSIS OF REGIONAL WASTESTREAM

Additional data analysis should be performed to continue improving our understanding of the Pacific Northwest waste stream. This data analysis should enable the states to reliably estimate their treatment and disposal capacity needs, and to characterize the wastestreams that are amenable to waste reduction.

Short Term:

a. Develop a survey method that identifies the primary generators of specific waste streams (such as heavy metals or incinerables) and their future waste reduction and disposal plans. Since it is likely that a small number of generators accounts for a relatively large percentage of any one wastestream, such a method could get a good handle on future capacity needs and trends.

b. Work cooperatively with the current Oregon and Idaho landfill companies and the proposed Washington incinerator projects to see how much of their waste volume is currently or is anticipated to be out-of-region wastes. In determining capacity needs for the region, it will be important to understand the market forces that are shaping the capacity demands for this region's private sector facilities.

c. Repeat the data analysis exercise performed by Dr. Stokes when the 1987 biennial report data are available. A second year of this kind of data analysis can give a more reliable picture of Northwest waste streams, and give better estimates of the likely ranges associated with various waste generation and capacity projections.

d. Characterize the wastestream "types" that exist in the Northwest in order to target specific wastestreams for waste reduction technical assistance programs (see 2(a) above).

Mid-Term:

e. If the short term research indicates its utility, expand the boundaries of the regional wastestream analysis to include other states or Canadian provinces. The actual "regional wastestream" should not be artificially constrained to the four states of EPA Region 10, if the data show it to be otherwise.

f. Improve the modeling capabilities to predict future wastestream generation, including site cleanup waste, small quantity generator waste, and the impact of waste reduction. The SARA capacity certification requires a 20 year capacity estimate, even though most observers believe such projections are not reliable at this time. Better modelling will be necessary to increase the accuracy of any estimates.

4. IMPROVE PACIFIC NORTHWEST HAZARDOUS WASTE DATA COLLECTION SYSTEMS:

Systems should be developed and data gathered in a way that produces compatible information among the four states. This would enable states to report and analyze information in a more consistent fashion, yielding useful information about the nature, movement and disposition of Pacific Northwest wastes, without unduly burdening industry.

Short term:

a. The four States and EPA should convene to ascertain if and how the data needs of each entity can be combined in a compatible fashion. Potential changes to the data system that are contemplated should be discussed thoroughly with industry and public interest groups prior to implementation.

b. The four states should continue their close scrutiny of and participation in the national data revisions underway. These include EPA's biennial reporting requirements; EPA's national hazardous waste data base; EPA's fledgling waste minimization reporting effort; and the development of data requirements for the SARA capacity certification process.

Mid-term:

c. The states and EPA should develop procedures for the regular reporting of data region-wide, as well as state-by-state; routine verification of source data for accuracy; and periodic assessment of data utility for possible simplification and improvement of the reporting system.

d. Systematic ways of measuring the progress of waste reduction efforts should be developed. Since this is not yet a mandatory reporting requirement, careful development of the reporting instrument is necessary and will require working with industry and public interest groups so that the resulting system meets the needs of all user groups.

D. CONCLUSION

This nation is currently spending well over two billion dollars a year rectifying the damage resulting from the way hazardous wastes were once handled. The recommendations in this report will cost a modest amount of money to implement. The States and EPA Region 10 have prepared proposals for federal funds which will enable us to start up the Regional Council, to continue the data analyses effort, and to begin waste reduction coordination. These funds pale in the face of the Northwest's share of the two billion dollar yearly bill for past mistakes.

There is a widespread conviction that the way hazardous wastes are managed must continue to improve. To do so, less waste must be generated in the first place, and better treatment and disposal facilities must be available for the remainder. Difficult decisions await us all, and it will take a common vision for comprehensive waste management to become a reality. We believe we can meet this challenge. If we do so, hazardous waste management has a positive future in the Northwest, and ultimately a far less expensive one.

Table 1

REGISTERED GENERATOR STATUS, REGION 10, 1985 (NUMBER)

	AK	ID	OR	WA	Total	%
Major Generator	23	30	206	623	882	33
Small Quantity Generator	14	58	80*	188	340	13
No Waste	61	163	250*	452	926	34
Exempt	18	43	75*	138	274	10
No Response				195	195	7
Closed or Sold	35	5	10*	22	72	3
Total	151	299	621	1618	2689	100

* Estimated

Source:
Hazardous Waste Management in the Northwest: A Status Report
Dr. Lee W. Stokes, August 1987

Table 2

CATEGORIES OF MAJOR GENERATORS, REGION 10, 1985 (NUMBER)

Source	AK	ID	OR	WA	REGION 10
Manufacturing					
Chemicals		1	25	43	69
Metalworking		1	45	80	126
Electronics		3	35	30	68
Wood Products		1	32	23	56
Prim. Sec. Metals			12	21	33
Petroleum Ref.	3		1	8	12
Transport Eqp.				43	43
Misc. Mfg.		3	2	92	97
Subtotal	3	9	152	340	504
Trade, Services, Govt.	8	10	41	194	253
Transportation	5	7	12	41	65
Military	4			45	49
Mining	3	1		3	7
Electric Utilities		3	1		4
Subtotal	20	21	54	283	378
Total	23	30	206	623	882

Source:
Hazardous Waste Management in the Northwest: A Status Report
Dr. Lee W. Stokes, August 1987

Table 3

CHARACTERIZATION OF HAZARDOUS WASTE, REGION 10, 1985 (TONS)[1]

Major Waste Types	AK	ID	OR	WA	REGION 10
Metals	594	256	4314	28106	33270
Non-Chlorinated Solvents	30	62	675	8272	9039
Chlorinated Solvents	42	74	2041	3228	5385
Other Halogenated Organics		3	928	23	954
Misc. Organics	178	24	734	282	1260
Ignitables (N.O.S.)[2]	674	67	3040	2872	6653
Corrosives	8	296	5683	14643	20630
Reactives	1	11	270	148	430
Pesticides[3]		406	1026	3190	4622
Electroplating Sludges (CN^-)		340	3294	15049	18683
Petroleum Residuals	14	20	37	6677	6748
Steel Emission Control Dust			2998	6342	9340
Steel Spent Pickle Liquor			115	4516	4631
Aluminum Coating Sludges			34	633	667
Misc. Inorganics	68	465	1624	92	2249
Washington Reg. Wastes				104,349	104,349
Total	1609	2024	26813	198,464	228,910

1. NPDES Wastewaters not included
2. Not otherwise specified
3. Including wood preservatives

Source:
Hazardous Waste Management in the Northwest: A Status Report
Dr. Lee W. Stokes, August 1987

Table 4

REPORTED DISPOSITION OF HAZARDOUS WASTE GENERATED
IN REGION 10, 1985, TONS

Method of Handling	AK	ID	OR	WA	TOTAL[1, 2]
In-State Storage					
Container	112	70	2369	6917	9468
Tank		43	3580	6426	10049
Pile				148,729	148,729
Impoundment	112			6150	6272
Other				9	9
Subtotal	234	113	5949	168,231	174,527
In-State Treatment					
Tank	5	60		354,021	354,086
Impoundment			4022		4022
Thermal				2437	2437
Other		11	379	1927	2317
Subtotal	5	71	4401	358,385	362,862
In-State Disposal					
Injection Well	1111				1111
Landfill		230	7055	39474	46759
Land Appl.				1445	1445
Impoundment				28982	28982
Other				1	1
Subtotal	1111	230	7055	69902	79298
Shipped out of State	790	1810	9097	70094	81791
Total	2140	2224	26502	666,612	697,478

1. Does not include PCB's

2. Includes 316,249T of wastewater which is treated and discharged under NPDES permit, directly or through POTW's.

Source:
Hazardous Waste Management in the Northwest: A Status Report
Dr. Lee W. Stokes, August 1987

Table 5

IMPORT AND EXPORT OF HAZARDOUS WASTE
REGION 10 STATES, 1985, TONS[1]

	AK	ID	OR	WA	REGION 10
Shipped to:					
Alaska		0	0	0	0
Idaho	16		143	2692	2855
Oregon	101	608		62405	63114
Washington	32	443	5506		5981
Shipped Out of Region 10	641	759	3448	5031	9879
Total Export	790	1810	9097	70128	
Imported from:					
Alaska		16	101	32	
Idaho	0		608	443	
Oregon	0	143		5506	
Washington	0	2692	62405		
Imported from Outside Region 10	0	934	0	0	934
Total Import	0	3738	63213	5981	
Net Import	(790)[2]	1973	54116	(64147)	(8945)

1. Does not include PCBs

2. ( ) = negative Value

Source:
Hazardous Waste Management in the Northwest: A Status Report
Dr. Lee W. Stokes, August 1987

Figure 1

Export of Hazardous Waste, 1985, Washington

Source:
Hazardous Waste Management in the Northwest: A Status Report
Dr. Lee W. Stokes, August 1987

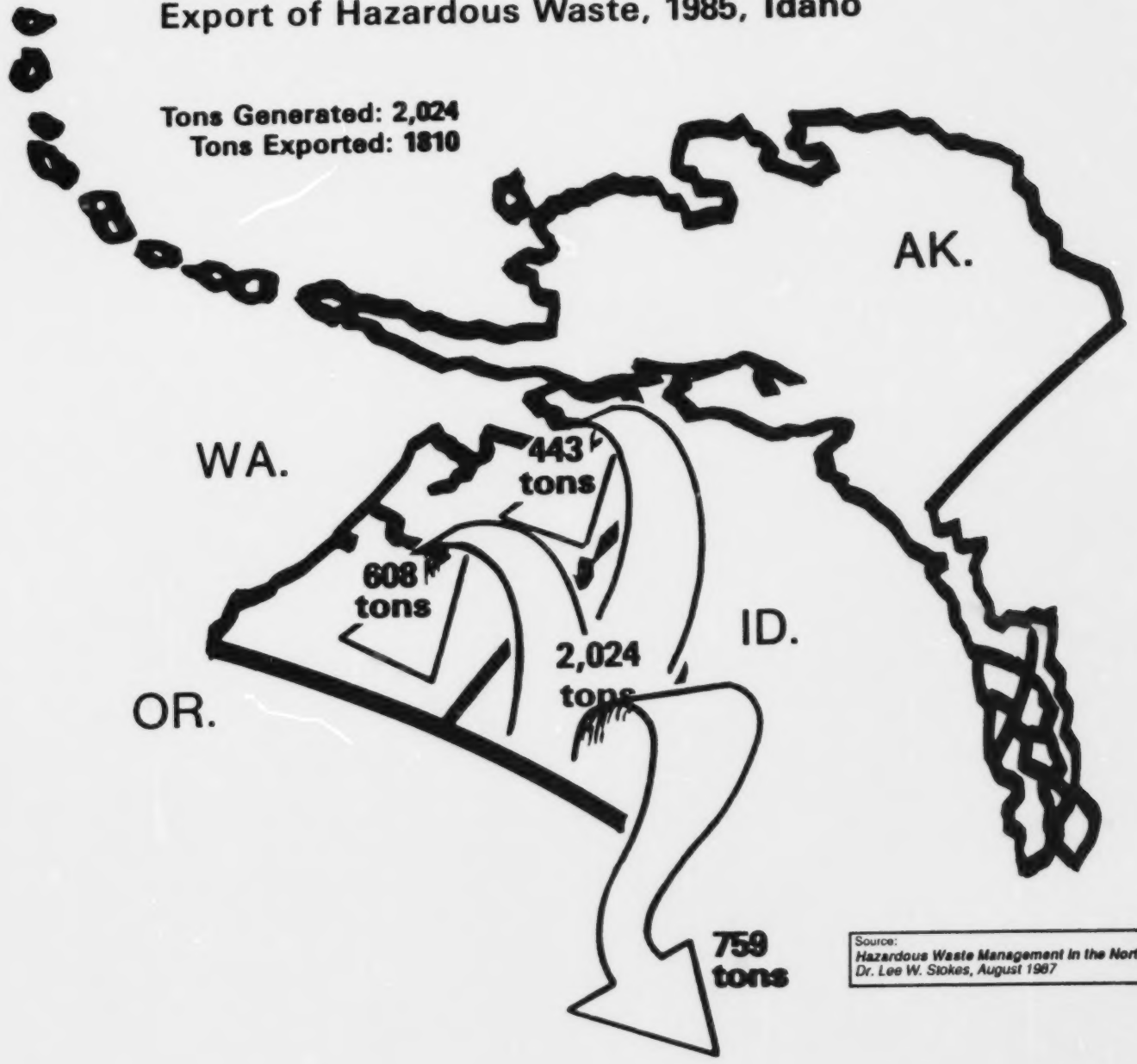
Figure 2

Export of Hazardous Waste, 1985, Oregon

Source:
Hazardous Waste Management in the Northwest: A Status Report
Dr. Lee W. Stokes, August 1987

Figure 3

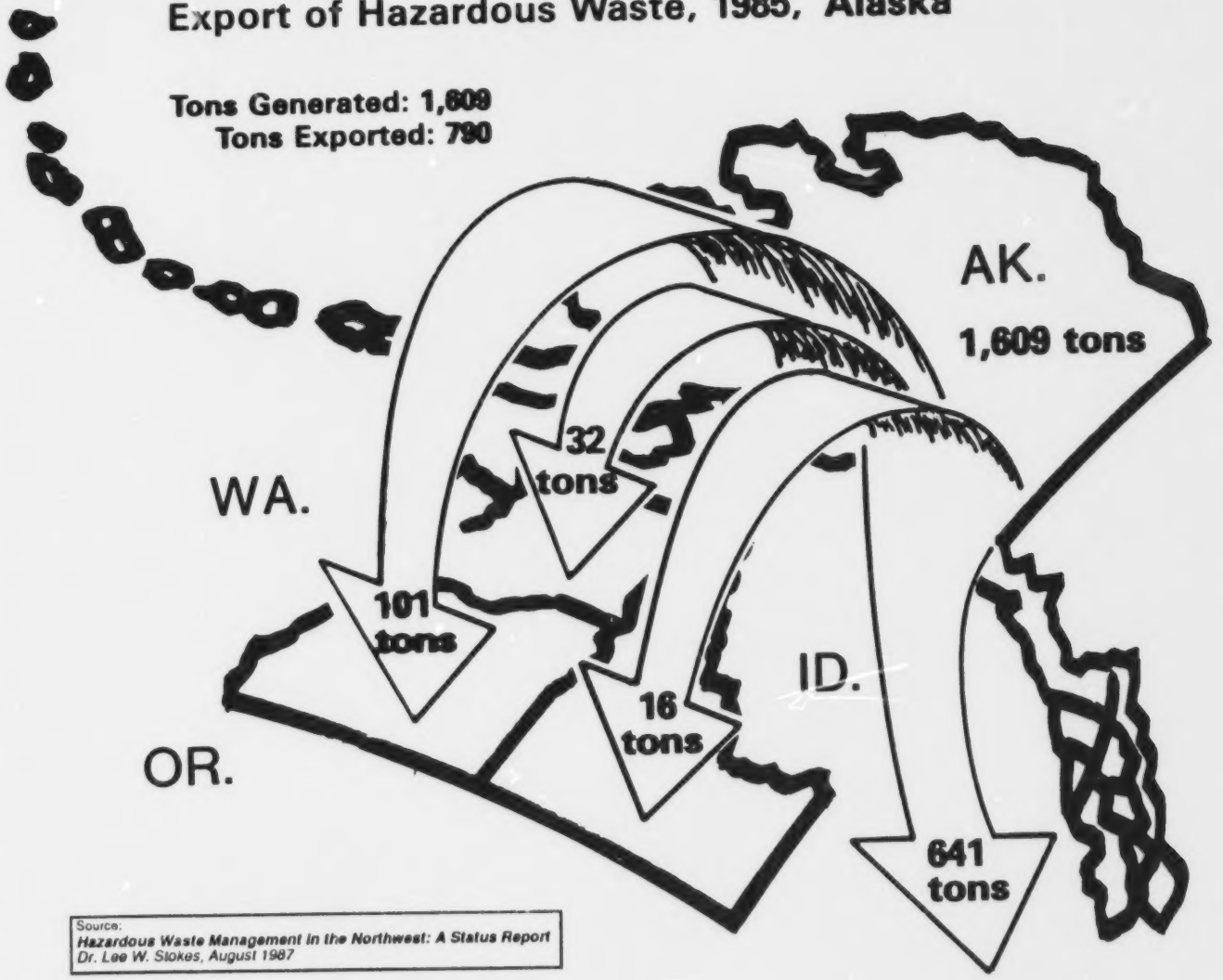
Export of Hazardous Waste, 1985, Idaho



Source:
Hazardous Waste Management in the Northwest: A Status Report
Dr. Lee W. Stokes, August 1987

Figure 4

Export of Hazardous Waste, 1985, Alaska



Source:
Hazardous Waste Management in the Northwest: A Status Report
Dr. Lee W. Stokes, August 1987

Figure 5

Commercial Hazardous Waste Landfill Capacity, Oregon

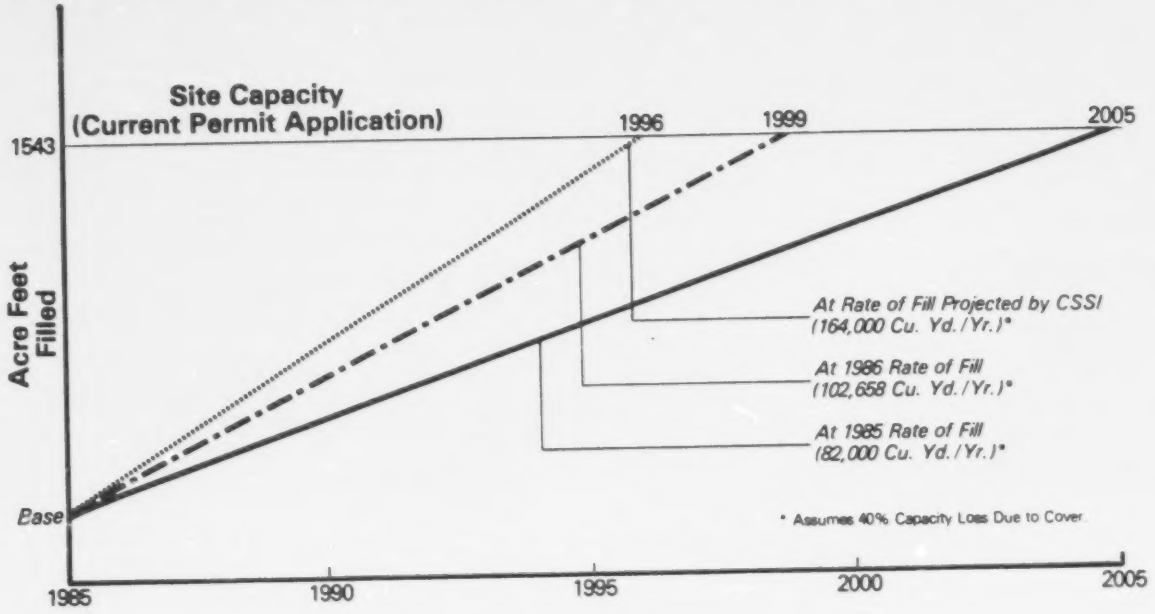
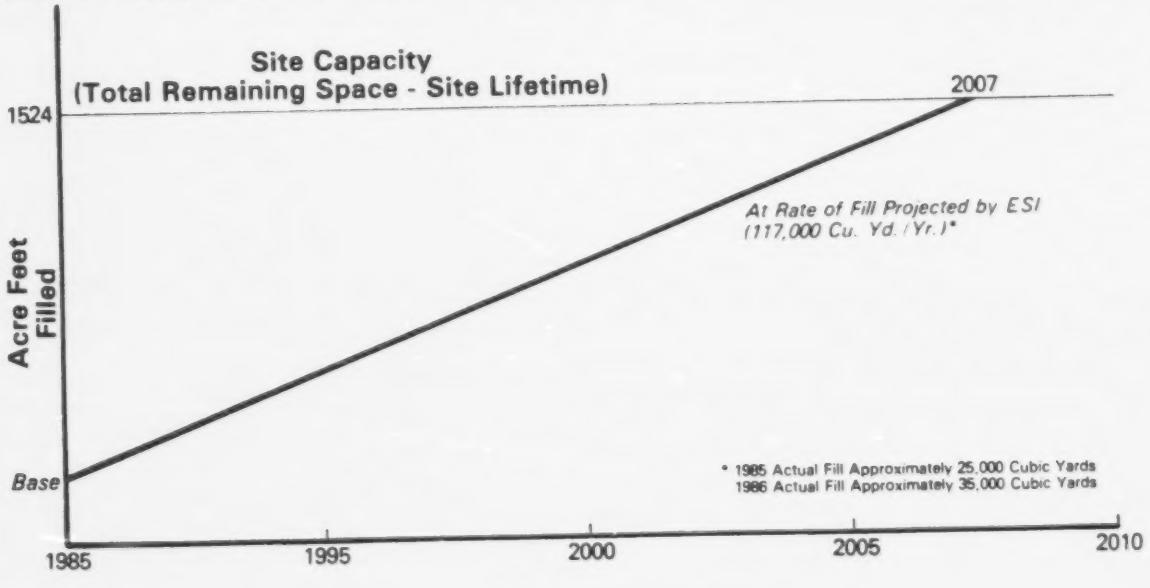


Figure 6

Commercial Hazardous Waste Landfill Capacity, Idaho



Source:
Hazardous Waste Management in the Northwest: A Status Report
Dr. Lee W. Stokes, August 1987

APPENDIX I

STATE HAZARDOUS WASTE CAPACITY ASSURANCE REQUIREMENT:

SARA 104(k)

APPENDIX I

STATE CAPACITY ASSURANCE REQUIREMENT

Section 104(k) of the Superfund Amendments and Reauthorization Act of 1986 (SARA):

(9)Siting. - Effective 3 years after the enactment of the Superfund Amendments and Reauthorization Act of 1986, the President shall not provide any remedial actions pursuant to this section unless the State in which the release occurs first enters into a contract or cooperative agreement with the President providing assurances deemed adequate by the President that the State will assure the availability of hazardous waste treatment or disposal facilities which -

(A) have adequate capacity for the destruction, treatment, or secure disposition of all hazardous wastes that are reasonable expected to be generated within the State during the 20-year period following the date of such contract or cooperative agreement and to be disposed of, treated, or destroyed,

(B) are within the State or outside the State in accordance with an interstate agreement or regional agreement or authority,

(C) are acceptable to the President, and

(D) are in compliance with the requirements of subtitle C of the Solid Waste Disposal Act.

APPENDIX II

REGIONAL HAZARDOUS WASTE STEERING COMMITTEE ROSTER

APPENDIX II

REGIONAL HAZARDOUS WASTE STEERING COMMITTEE ROSTER

CO-CHAIRS

Robie G. Russell
Regional Administrator
EPA, Region 10

Fred Hansen, Director
Oregon Department of
Environmental Quality

ALASKA

Senator Bettye Fahrenkamp
Alaska State Senate

Mayor Tony Knowles
City of Anchorage

Larry Weiss
Executive Director
Alaska Health Project

IDAHO

Joan Cloonan
Assistant General Counsel
JR Simplot Company

Senator Denton Darrington
Idaho State Senator

Bill Saul, Dean
College of Engineering

OREGON

Jonathan Ater
Attorney-at-Law
Lindsay, Hart, Neil, & Weigler
Portland, Oregon

Frank Deaver, Director
Corporate Environmental Services
Tektronix, Inc.
Beaverton, Oregon

Cheryl Coodley
Assistant Attorney General
Oregon Department of Justice

Jean Meddaugh
Oregon Environmental Council

WASHINGTON

Gil Omenn, Dean
School of Public Health and
Community Medicine
University of Washington

Representative Jolene Unsoeld
Washington State House of
Representatives

Neil Standal, General Manager
Boeing Services Division
The Boeing Company
Seattle, Washington

Pam Crocker-Davis
Legislative Coordinator
National Audubon Society
Olympia, Washington

Dick Ford, Managing Partner
Preston, Thorgrimson, Ellis & Holman
Seattle, Washington

APPENDIX III

APRIL AND OCTOBER SYMPOSIA ATTENDANCE BREAKDOWN

APPENDIX III

CHALLENGES AND OPPORTUNITIES: MANAGING HAZARDOUS WASTE IN THE PACIFIC NORTHWEST

April 28, 29, 1987 Conference Attendance Breakdown

Conferee Categories	AK	ID	OR	WA	Other	TOTAL
State Elected & Appointed Officials	-	1	1	6	1	9
Staff to Elected Officials	-	1	-	9	-	10
Local Elected & Appointed Officials	-	3	3	4	-	10
State Agencies	3	2	9	23	1	38
Local Government Agencies	3	2	-	29	-	34
Federal Agencies (Inc. 1 Congressional Staff)	2	4	5	39	2	52
Attorneys	1	1	6	7	-	15
Industry	7	14	13	49	6	89
Commercial	4	4	7	22	-	37
Consultants	3	-	2	28	-	33
Nonprofit/Environmental Organizations	2	2	3	11	-	19
Academia/Research	-	-	1	5	-	6
Media	-	1	1	-	-	2
Tribes	-	-	-	2	-	2
Category Undetermined	-	-	-	2	-	2
TOTALS	25	34	51	236	10	356

APPENDIX III

A POSITIVE FUTURE: HAZARDOUS WASTE MANAGEMENT IN THE PACIFIC NORTHWEST

October 19, 20, & 21, 1987 Conference Attendance Breakdown

Carefree Categories	AK	ID	OR	WA	Other	TOTAL
State Elected Officials	3	5	8	5	-	21
Staff to State Elected Officials	1	-	-	8	-	9
Local Government Elected Officials	1	1	-	4	-	6
State Agencies	2	4	12	22	2	42
Local Government Agencies	1	3	-	16	-	20
Federal Agencies: EPA	1	-	-	36	5	42
Other	1	1	3	5	1	11
Attorneys	-	2	3	7	-	12
Industry	7	7	11	31	2	58
Commercial	2	2	3	15	3	25
Consultants	3	1	4	33	2	43
Nonprofit/Environmental Organizations	3	3	3	5	-	14
Academic/Research	-	2	-	10	2	14
Tribes	-	-	-	1	-	1
Category Undertermined	-	-	-	2	1	3
TOTALS	25	31	47	200	19	321

APPENDIX IV

EXECUTIVE SUMMARY

HAZARDOUS WASTE MANAGEMENT IN THE NORTHWEST: A STATUS REPORT

Dr. Lee W. Stokes

HAZARDOUS WASTE MANAGEMENT IN THE NORTHWEST
A STATUS REPORT

EXECUTIVE SUMMARY

AUGUST, 1987

Hazardous waste management data are collected and analyzed independently and in somewhat disparate fashion by the Region 10 offices of the U.S. Environmental Protection Agency and the pollution control agencies of the northwest states. Accurate and comprehensive information regarding hazardous waste generation and management will be needed soon if the industries and governmental entities of the region are to establish a coordinated planning program capable of identifying cost-effective means of compliance with new statutory mandates. One important aspect of the emerging regulatory program is the requirement that states demonstrate by 1989 that disposal capacity will be available for all hazardous wastes expected to be generated in the next 20 years. Certification to that effect will be necessary if a state is to remain eligible for remedial action funding through the provisions of the Comprehensive Environmental Response, Compensation, and Liability Act.

An assessment of the status of hazardous waste and PCB waste control programs in Region 10 was conducted in an attempt to characterize the materials and current handling methods and to consolidate waste management data from the four states (Alaska, Idaho, Oregon, Washington). The nature and effectiveness of the data collection systems were also examined.

Hazardous Waste Generation

The most recent biennial reports (1985) and other documents were reviewed so that sources and amounts of waste regulated pursuant to the Resource Conservation and Recovery Act and companion state laws could be determined. Eight hundred eighty-two major generators produced reportable quantities of hazardous waste during 1985 (Alaska, 23; Idaho, 30; Oregon, 206; Washington, 623). Fifty-seven percent of the generators were manufacturing plants and 29% were trade, services or governmental organizations.

The Region 10 major generators reported 228,910 tons of hazardous waste, exclusive of PCBs. Washington contributed 198,464 tons (86.7%); Oregon , 26,813 tons (11.7%); Idaho, 2024 tons (0.9%); and Alaska, 1609 tons (0.7%). Small quantity generators produced an additional 11,000-12,000 tons of waste, and 30,000-60,000 tons of unregulated hazardous waste from households were sent mostly to public solid waste landfills.

Manufacturing industries accounted for 86% of the waste, the largest fraction (37.5%) coming from primary and secondary metals processors. Stone and clay products industries produced 15.3% of the waste, transportation equipment manufacturers 10.3%, and the electronics companies 4.5%. Only about two percent of the waste came from cleanup of contaminated sites in 1985 (in 1984, the figure was nearly 20%).

Almost one-half of the wastes were those regulated only by the State of Washington (104,349 tons, 46%), such as cement kiln dust, furnace black dross and potlining from the aluminum industry, boiler fly-ash from the wood products industry and fluxing salts from magnesium reduction. The dominant RCRA-regulated wastes were metals (14%), corrosives (9%), electroplating sludge (8%), steel emission dust (4%) and non-chlorinated solvents (4%).

Disposition of Hazardous Waste

The Region 10 states ship waste to one another and to facilities in other states for treatment and disposal. Waste is also imported to the region for disposal. Nearly 10,000 tons of waste were exported from the region in 1985, while 3694 tons were imported; thus, the region was a net exporter of hazardous waste. Alaska exported 10% of its waste to other Region 10 states and 40% to states outside the region. Idaho exported one-half of its waste to Oregon and Washington and 38% to states outside the region, but also imported twice as much waste for disposal as was exported. Oregon exported over one-half of its waste (15,000 tons), but imported nearly 66,000 tons for disposal, most of which came from Washington.

Region 10 wastes are often subjected to a series of reportable management processes; the reports of each management practice result in double or triple counting of some wastes, and therefore the generator and facility reports cannot be easily reconciled. Imported wastes cannot be specifically tracked either. Thus, the waste facility reports document the handling of substantially more waste than is generated in a given year.

On-site storage (for over 90 days) accounted for 107,000 tons of waste in the region in 1985 and 75,000 tons were stored off-site. The predominant storage method (by weight) was waste piles. Nearly 10,000 tons of waste received on-site treatment and 49,000 tons were treated off-site. On-site disposal of 63,000 tons of waste was accomplished, while 77,000 tons were disposed of at off-site facilities. Over 100,000 tons of Region 10 wastes were landfilled and 45,000 tons were impounded as a treatment process or final disposal; 1111 tons of waste were deep well injected in Alaska.

PCBs

Wastes containing polychlorinated biphenyls were considered separately since they are regulated by the Toxic Substances Control Act rather than as RCRA hazardous wastes. A limited special survey of electrical utilities and other waste generators provided new insight regarding PCB waste generation in Region 10. Concentrated PCB waste oils (greater than 500 ppm PCB) were apparently generated in an amount falling within the range of 450-550 tons in 1985. Mineral oil wastes with PCB concentrations from 50-500 ppm may have totaled 1200-1600 tons.

Disposal of waste transformer carcasses was estimated to amount to 2000-4000 tons. PCB-contaminted soil, debris and miscellaneous equipment constituted 2000-3000 tons of waste. The generation of high concentration PCB oil wastes in Region 10 is expected to increase slightly until 1988, remain fairly constant until 1991, and then decline precipitously due to several regulatory factors. The lesser-contaminated mineral oils, mostly present in long-lived transformers, will remain in the waste stream in slowly declining amounts for 15-30 years. PCBs are no longer being manufactured and have not been distributed in commerce for some time; however, remedial action projects, particularly in Alaska, will generate PCB wastes for 10 years or more.

Projected Hazardous Waste Generation

Several elusive factors affecting the future generation of hazardous waste in the region were crudely estimated as part of this assessment. Economic growth, waste reduction practices, PCB equipment phaseouts and implementation of remedial action (site cleanup) programs were projected to produce a small net increase in waste generation over the 1985 level during the next 20 years. The routinely generated wastes (non-cleanup) are expected to decrease somewhat in the next 15 years due to waste reduction programs, but ultimately increase from the 1985 base amount as a result of industrial growth; however, the projection of other quite different scenarios could be easily justified.

Hazardous Waste Management Technology

The Region 10 hazardous waste streams were generally analyzed in terms of the applicability of alternative technology because of the impending limited national ban on landfilling of wastes. One hundred twenty-six thousand tons of Region 10 RCRA-regulated wastes (based on 1985 data) will be considered for landfill ban by 1990 through the EPA regulatory process. Less than half of that waste is being landfilled now (other than Washington-regulated waste).

Including contaminated soils, up to 60,000 tons of hazardous waste per year might be amenable to incineration; however, two-thirds of that waste would probably require fuel-assisted burning due to low potential heat content. Wastes to be landfilled could increase or decrease depending on economic factors arising from the treatment standards (most not yet established) associated with the landfill ban statute. Increased recycling and treatment of some categories of waste are probable. However, alternatives to landfilling will not be readily available for some wastes, and the stabilization and encapsulation processes which might be applied to those wastes would substantially increase their volume prior to landfilling.

Waste Management Capacity

A review of waste management facility permit applications revealed a potential regional on-site capacity for waste storage to be nearly 280,000 tons, far more space than actually occupied in 1985. On-site treatment facilities would handle over 30,000 tons of waste per year, other than dilute aqueous wastes which can be treated in very large volumes. Proposed on-site incinerator capacity totals 4700 tons per year. Permit applications for on-site disposal reflect facilities capable of handling three trillion tons of wastewater per year by injection well (Alaska only), 57,000 tons by landfill or land application, and 34,000 tons by impoundment.

Existing and proposed off-site storage facilities would provide space for 250,000 tons of waste, mostly in piles and impoundments. Various off-site treatment facilities could handle up to 400,000 tons of aqueous inorganic wastes, solvents, toxic anions and oily wastes. No commercial incinerators exist in Region 10. One formal permit application has been filed for construction of an incinerator which would burn up to 50,000 tons of waste per year, and plans for a similar (competing ?) project have been informally announced.

Off-site landfill capacity as proposed for 10-year RCRA permits would be about five million tons. The lifetime of the Idaho commercial landfill is estimated by the company to be exactly 20 years (2007); such a rate of fill would require the annual intake of waste in volumes 4-5 times as great as in 1985.

The Oregon commercial landfill would be full in 18 years (2005) at the rate of fill experienced in 1985; in 12 years (1999) at the 1986 rate of fill; and in 9 years (1996) at the rate of fill anticipated by the company. However, note that the company owns much more land adjacent to the existing facility which could be developed as landfill. The actual permit proposals beyond the next 10 years cannot be anticipated.

Problems/Recommendations

Several problems were encountered when using the various hazardous waste management data systems. Most of those problems relate to the unfamiliarity of some generators with the reporting requirements and formats, the narrow scope of required data, unsophisticated reporting systems in some states, poor coordination of data collection processes in the region and the absence of a suitable central data repository.

It is recommended that a regional or national hazardous waste data management system be developed with the following features:

1. A single report form to be used by all states (or as the core of any state-developed form) to collect data both from hazardous waste generators and waste management facilities.

2. Surveys conducted at least annually and summary reports issued without great lag time.

3. Clearly-stated reporting requirements, particularly with regard to definitions of reportable wastes (for example, under what circumstances are volumes of wastewaters reportable prior to treatment? Conversely, when are treatment residuals reportable as newly generated wastes?)

4. An annual determination of the regulatory status of all potential generators.

5. Verification of all generator and facility-reported data by state agencies and EPA (staff augmentation required).

6. Characterization of wastes in terms of physical form and all relevant chemical components (within the limits of practical analysis) through use of a more complex coding system.

7. Tracking of wastes throughout the country and reporting of treatment and ultimate disposal of those wastes to the regulatory agency in the state of origin.

8. The capability to account for stored wastes at the beginning as well as at the end of a reporting period.

9. More detailed description of waste treatment processes through a more complex coding system.

10. The capability to compare the volumes of various wastes on an annual basis and to determine the degree to which each generic means of waste reduction is employed by each category of industry.

11. The capability to determine the remaining permitted capacity of landfills on an annual basis and the practical throughput capacity of treatment facilities.

12. The entry of all core data into a commonly accessible automated system.

It is further recommended that the Region 10 states, individually or collectively, conduct intensive studies of waste management capacity and waste reduction potential as soon as practicable. The advice and assistance of the waste generating industries and waste management businesses should be solicited to assure success of the investigations.

APPENDIX V

OCTOBER 20, 1987 LEGISLATIVE ROUNDTABLE PARTICIPANTS

APPENDIX V

October 20, 1987 LEGISLATIVE ROUNDTABLE PARTICIPANTS

Alaska Participants

Representative Sam Cotten
Alaska House of Representatives

Representative Curt Menard
Alaska House of Representatives

Dennis Kelso, Commissioner
Alaska Dept. of Environmental Conservation
(ADEC)

Idaho Participants

Representative Mary Ellen Lloyd
Idaho House of Representatives

Cheryl Koshuta, Chief
Hazardous Waste Materials Bureau
Idaho Dept. of Health & Welfare

Oregon Participants

Senator Andy Anderson
Oregon State Senator

Fred Hansen, Director
Dept. of Environmental Quality

Representative Ron Cease
Oregon House of Representatives

Representative Mike Kopetski
Oregon House of Representatives

Senator Joyce Cohen
Oregon State Senator

Representative Mike McCracken
Oregon House of Representatives

Representative Wayne Fawbush
Oregon House of Representatives

Representative Nancy Peterson
Oregon House of Representatives

Senator Jeannete Hamby
Oregon State Senator

Representative Bob Pickard
Oregon House of Representatives

Washington Participants

Senator Mike Kreidler
Washington State Senator

Representative Jolene Unsoeld
Washington House of Representatives

Andrea Riniker, Director
Washington Dept. of Ecology

Senator Al Williams
Washington State Senator

Representative Nancy Rust
Washington House of Representatives

British Columbia Representative

Earle Anthony, Assistant Deputy Minister
Ministry of Environment and Parks

EPA Region 10 Participants

Robie Russell
Regional Administrator

Bill Ross
Consultant

APPENDIX VI

SUMMARY OF COMMENTS FROM SYMPOSIA EVALUATION QUESTIONNAIRES

SUMMARY OF EVALUATION FORMS:

April 28/29 Hazardous Waste Capacity Symposium

General Observations from Conference:

1. Credible and useful framework with which to address the issues (waste reduction, capacity, and how to go about the siting process). Generally impressed with mix of attendees.

2. Widespread belief that current hazardous waste management capacity is inadequate (particularly by industry and public sector employees -- and to a large extent by elected officials).

3. Waste reduction efforts must be pursued more vigorously. Many wanted to know how much we can reduce hazardous wastes.

4. Generally expressed interest in "regional" solutions and efforts, addressing such topics as the waste stream/capacity issue, policy level and financial support of waste reduction, EPA technical and financial assistance.

5. Interest in regional political process to lead to gubenatorial endorsement for working on the issue(s).

Comments on Format and Organization of Follow-up Session:

1. Target certain issues and attempt to make some progress in dealing with them in the Northwest.

2. Make it more interactive -- via small group sessions on specific topics. Use groups to float some ideas/recommendations.

3. More reports on success stories requested by elected officials.

4. Would like larger percentage of "public interest" representation -- including more elected officials.

Suggested Topics for Fall Conference:

1. Waste Reduction:

   - More success stories -- industries in this region
   - Discussion of type approaches useful to foster reduction efforts in the Northwest (regulatory, technical assistance/voluntary)
   - How much can we realistically expect reduction to contribute?
   - Federal solid waste definitions/regulations -- do they result in encouraging waste reduction?
   - What about Small Quantity Generators (SQGs) and reduction? Report on waste reduction and recycling.

SUMMARY OF EVALUATION FORMS:

April 28/29 Hazardous Waste Capacity Symposium (Cont)

2. Regional/State Waste Stream Data and TSD Capacity:

   - What do the numbers tell us?
   - Need credible capacity effort as way to help get by the waste reduction vs. siting gridlock.
   - What is the relationship between regional political lines and the nature of the hazardous waste TSD market?

3. Siting New Capacity:

   - Regional siting efforts -- does it make sense and how would we begin to address in the Northwest?
   - Trade-off: siting and permitting a facility vs. risk of transportation.
   - Other regions' experiences with siting -- more on case studies looking at particular types of issues (e.g., siting approach, technologies, risk, public involvement).
   - Public and private roles in siting (selection, ownership and operation).

4. Siting and Public Involvement:

   - Environmentalist panel: successful scenarios in siting. Building involvement and trust.
   - Use of mitigation and compensation in siting facilities.
   - Innovative dispute resolution techniques.

5. Uncertainty and Risk:

   - Risks and benefits of on-site vs. off-site commercial treatment.
   - Health risks of incineration.
   - Innovative technologies: do we allow higher level of risk?
   - Risk of not having capacity

6. Treatment and Destruction Issues:

   - Economics of hazardous waste incineration (facility size, mobile vs. fixed, liability, public/private questions).
   - Most promising technologies and ways to regionalize.

SUMMARY OF EVALUATION FORMS:

April 28/29 Hazardous Waste Capacity Symposium (Cont)

7. Interstate and Regional Efforts:

   - What are the legal, economic and political barriers to Regional hazardous waste management approaches?
   - Exploration of regional approaches (e.g., waste exchange, waste reduction efforts).
   - What are the priority areas for regional hazardous waste management efforts?

EVALUATION FORM SUMMARIES
OCTOBER 19 - 21 HAZARDOUS WASTE MANAGEMENT SYMPOSIUM

General Observations From Conference:

(1) Legislative Roundtable very informative. Need more of this to better educate elected officials about activities in all Northwest states.

(2) Small group discussion sessions were very useful, but could have been longer. Participants would have liked advance notice about the topics of discussion so they could both prepare and express preferences about the group in which they would participate.

(3) Generally good coverage of issues, except for transportation which merited more prominence.

(4) Inadequate participation by Tribal and Federal Facilities. These groups should figure more prominently in follow-up efforts.

(5) Regional Advisory Group or Council strongly endorsed, provided it has appropriate focus. It's important to step back evaluate how to make all the facets of waste management fit together.

General Comments for Follow-up Activities

(1) Important to get the media involved and educated. They are important players.

(2) Keep conference attendees informed about subsequent regional efforts.

(3) Time to get specific in focus--an action plan is essential. perhaps consider small task forces to develop (ideas on waste reduction, public participation, waste exchanges etc.).

(4) Government needs to be more proactive on waste reduction, figuring out it's role and providing clearer incentives.

Specific Comments:

(1) Waste Reduction:

- Better education for and communication with small business and small quantity generators.
- Greater EPA leadership role in waste reduction, supporting state and industry activities. Information and training are key items.
- More research and development incentives needed for waste reduction (and treatment, too).
- Can the federal government shift its regulatory orientation to support waste reduction, recycling, etc.? How proactive should regulatory agencies be?

(2) Data/Capacity:

- Improve data without getting preoccupied about precise numbers -- uncertainty is inherent in data.
- Refine information on long term hazardous waste management needs. Develop more serious scheme to project future waste stream/waste management capacity.
- Develop new capacity with flexibility in mind. Relate new capacity to waste reduction needs.
- Information requirements for the regulated community seem to grow endlessly, and yet it is usually the case that the the kind of data useful for state and regional choices is not developed. Let's begin to rationalize these requirements, and perhaps assemble a regional public/private data group to improve governmental data without overtaxing industry.

(3) Siting and Public Participation:

- Link siting to good waste reduction programs.
- There are different perceptions of risk regarding siting (control uncertainty, etc.,). Need to follow-up on this, discussing implications and how to resolve issues.

(4) Cross - Issue Linkages:

- Tax and financial incentives are very sensitive items. Make sure we send out signals consistant with steps we wish to encourage.
- Need more emphasis on how to make the hazardous waste management system work on the local level. Might have part of a model in the Anchorage program, but need to get the information out so we don't "reinvent the wheel".

APPENDIX VII

APRIL AND OCTOBER SYMPOSIUM AGENDAS

APPENDIX VII

Announcing A Symposium
for
Public and Private Sector
Decision and Opinion-Makers

CHALLENGES AND OPPORTUNITIES:

MANAGING HAZARDOUS WASTE IN THE PACIFIC NORTHWEST

SEATTLE, WASHINGTON
April 28 and 29, 1987
Seattle Sheraton Hotel

Co-sponsors:
U.S. Environmental Protection Agency, Region 10
&
The States of Alaska, Idaho, Oregon, and Washington

Cooperator:
Institute for Environmental Studies,
University of Washington

AGENDA Tuesday, April 28, 1987

8:00a.m.	**SIGN-IN.** Metropolitan Ballroom, 3rd floor, Seattle Sheraton, 1400 Sixth Avenue	
8:40	**WELCOME.** Conference Moderator	**Bill Ross**
8:45	**KEYNOTE.** Hazardous Waste Management Issues in the Northwest	**Robie G. Russell,** Regional Administrator Region 10, US EPA
9:15	**Panel: STATE ENVIRONMENTAL DIRECTORS.** Current approaches and efforts of the four states	**Dennis Kelso,** Alaska **Ken Brooks,** Idaho **Fred Hansen,** Oregon **Andrea Riniker,** Washington
10:30	**BREAK.**	
10:45	**MANAGEMENT OPTIONS FOR WASTE STREAM.** The national outlook for hazardous waste management practices by the Director, Office of Policy, Office of Solid Waste & Emergency Response.	**Thomas Devine,** EPA Headquarters
11:30	**PROSPECTS FOR WASTE MINIMIZATION:** Innovative state efforts and private sector initiatives. Case studies.	
	Pollution Prevention Pays	**Roger Schecter,** Director, North Carolina's Waste Reduction Program
12:15 p.m.	**LUNCH.** (on your own)	
1:45	**PROSPECTS FOR WASTE MINIMIZATION.** (continued)	
	Encouraging Reduction and Understanding its Limits.	**David Leu,** Chief, Alternative Technology Section, California Dept. of Health Services
2:30	**Reducing Costs and Dealing With What's Left.**	**Cliff Bast,** Corporate Environmental Manager, Hewlett-Packard, California
3:15	**BREAK**	
3:30	**Panel: PERSPECTIVES ON THE NORTHWEST WASTE MANAGEMENT SCENE.** Moderator: **Fred Hansen,** Director, Oregon Department of Environmental Quality	**David Wigglesworth,** The Health Project, Anchorage, Alaska **Earl Weeks,** General Manager, Idaho County Light and Power, Grangeville, Idaho **Bob Gilbert,** Chair, Hazardous Waste Committee, Association of Oregon Industries **Terry Novak,** City Manager, Spokane, Washington
5:00	**WRAP-UP.**	**Bill Ross**
5:30-7:00	**RECEPTION — NO-HOST BAR**	

AGENDA Wednesday, April 29, 1987

8:00 a.m.	**SIGN-IN.** Metropolitan Ballroom, 3rd floor, Seattle Sheraton.	
8:45	**WELCOME.**	**Andrea Riniker,** Director, Washington Department of Ecology
9:00	**AN OVERVIEW OF THE CAPACITY QUESTION.** The relationship between market forces and regulatory constraints in creating supply/demand for destruction and disposal capacity.	**Ken Rubin** Apogee Research, Bethesda, Maryland
10:00	**BREAK.**	
10:15	**NEW SITES: HOW TO GET THERE IF WE NEED TO.** Different Approaches to Siting Capacity.	**Richard Gimello,** Executive Director, New Jersey Hazardous Waste Siting Commission
11:00	**SITING CASE STUDIES** **Resource Conservation and Environmental Protection — The Arizona Experience**	**Jarrell Southall,** Contract Administrator, ENSCO, Arizona
11:45p.m.	**LUNCHEON ADDRESS**	**Hon. Cecil D. Andrus,** Governor of Idaho
1:15	**SITING CASE STUDIES** (continued) **Learning from Failure — The Massachusetts Experience .**	**Joan Gardner,** Executive Director, Massachusetts Hazardous Waste Facility Site Safety Council
2:00	**Panel: SITING—PUBLIC PERCEPTION, PUBLIC PARTICIPATION, AND RISK COMMUNICATION.** Moderator: **Frances Chapman,** Community Relations Coordinator, Region 10, EPA	**Gil Omenn,** Dean, School of Public Health and Community Medicine, University of Washington **Winston Goering,** Mayor, Nampa, Idaho **Patti Epler,** *Anchorage Daily News*, Alaska
3:30	**BREAK**	
3:45	**WHAT DO WE STILL NEED TO KNOW?** Panel/Audience Interaction about Questions and Possible Directions. Moderator: **Robie G. Russell,** Administrator, Region 10, US EPA	**Tony Knowles,** Mayor, Anchorage, Alaska (invited) **Jack Peterson,** Director, Idaho Mining Association, and Chair, Idaho Hazardous Waste Management Planning Committee

WHAT DO WE STILL NEED TO KNOW? (continued)

John C. Beatty, Jr., Chair, Oregon Hazardous Waste Advisory Committee

Pam Crocker-Davis, Washington State Representative, National Audubon Society

5:00 **ADJOURN**

REGISTRATION:

The fee for the symposium includes one speaker luncheon and program materials. *To register,* please fill out the registration form below and send to Hazardous Waste Management Symposium, Institute for Environmental Studies, FM-12, University of Washington, Seattle, WA 98195.

If you are unable to attend, a refund of the registration fee, less $20.00 for handling, will be made if requested by April 27, 1987.

For more information please contact:
Polly Dyer
Continuing Environmental Studies Director
IES, UW, (206) 543-1812.

REGISTRATION FORM

HAZARDOUS WASTE MANAGEMENT — April 28-29, 1987

Registration Fee $50.00 $_____

Enclose check payable to: University of Washington
(U.S. funds only)

Purchase Order No. or Requisition No. _____

Billing Address: _____

_____

Complete and return with fee to:

Hazardous Waste Management Symposium
Institute for Environmental Studies
200 Engineering Annex, FM-12
University of Washington
Seattle, WA 98195

Name _____

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A Symposium
for
Government, Business, and Public Leaders

A POSITIVE FUTURE: HAZARDOUS WASTE MANAGEMENT in the PACIFIC NORTHWEST

Seattle, Washington
October 19, 20, & 21, 1987
Seattle Sheraton Hotel

Co-sponsors:

U.S. Environmental Protection Agency, Region 10
and
The States of Alaska, Idaho, Oregon, and Washington

Cooperator:

Institute for Environmental Studies,
University of Washington

A POSITIVE FUTURE:
Hazardous Waste Management in the Pacific Northwest

BACKGROUND:
This past April, the states of Alaska, Idaho, Oregon and Washington, and U.S. EPA, Region 10, hosted a symposium for key opinion and decision-makers to assess current efforts to develop a comprehensive hazardous waste management system for the Pacific Northwest. The response was compelling and the message clear - Northwest leaders are committed to development of appropriate alternatives, although important issues must be addressed as we put them in place. Data-gathering efforts are insufficient to provide adequate data to decision-makers on a region-wide basis. Capacity assessment efforts and siting procedures are largely untested throughout the region. Waste reduction efforts are under way in many large and small businesses, but public policy could be better focused to provide incentives for reduction efforts. It is necessary to continue the dialogue on these and other imortant issues as we develop a comprehensive hazardous waste management system for the Pacific Northwest.

PURPOSE:
This second symposium is designed to focus attention of key leaders on current regional data, waste reduction and siting efforts, and to solicit input on appropriate future actions. Leaders from industry, government, and public-interest groups will share their views on the status of the region's hazardous waste-stream and management options. A White Paper is being prepared to stimulate discussion on future actions; attendees will be asked to consider and comment upon these and other perspectives presented during the symposium. The Regional Administrator of Region 10, EPA, and the four State Directors will then prepare a report for the four Governors and State Legislatures and the Administrator of EPA outlining state and regional actions that should be initiated by the public and private sectors.

WHO SHOULD ATTEND:
Key public/private sector, public and environmental interest organizations, attorneys-at-law, and media leaders and decision-makers interested in helping to formulate these recommendations for action.

TOPICS TO BE DISCUSSED AT THE OCTOBER 19-21 SYMPOSIUM INCLUDE:

- The current data and capacity picture in the Pacific Northwest.
- How national EPA initiatives will affect efforts in the Pacific Northwest.
- What processes work best on siting-related decisions and how risk is best approached from the local citizens' perspective.
- Waste reduction successes to date in the Northwest and the main elements of a waste reduction model tailored to meet the needs of the Pacific Northwest.
- What on-going regional coordination is needed as part of future efforts.

SYMPOSIUM STEERING COMMITTEE CO-DIRECTORS:

Robie G. Russell, Administrator,
Region 10, U.S. Environmental
Protection Agency

Fred Hansen, Director,
Oregon Department
of Environmental Quality

AGENDA Monday, October 19, 1987

Morning 7:30-8:45	REGISTRATION: Grand Ballroom, 2nd floor, Sheraton Hotel, 1400 Sixth Avenue	
8:45	WELCOME	**Bill Ross**, Moderator, Ross & Associates, WA
8.55	OPENING REMARKS: Taking The Next Steps in the Northwest	**Robie G. Russell**, Administrator, Region 10, U.S. EPA
9:10	KEYNOTE	**Lee M. Thomas:** Administrator, U.S. EPA
9:45	BREAK	
10:00	**UNDERSTANDING OUR WASTE STREAM AND ASSESSING CAPACITY NEEDS: The Vital Role of Good Data**	
	INTRODUCTION:	**Richard Ford**, Moderator, Preston, Thorgrimson, WA
10:25	THE CURRENT NORTHWEST DATA AND CAPACITY PICTURE	**Lee Stokes**, Boise State University
11:25	STATE CAPACITY CERTIFICATION: The SARA Capacity Requirement	**Michael Taimi**, Office of Cross-Media Analysis, OSWER, U.S. EPA
12:00	LUNCH	On your own
Afternoon 1:30	VIEWS FROM THE INSIDE: Northwest Perspectives on How Generation, Analysis, and Use of Hazardous Waste Data Helps the Decision-Maker	**Tom Korpalski:** Hewlett-Packard, ID **Betty Tabbutt**, Washington Environmental Council **Patrick Wicks**, Environmental Resource Management NW, WA
3:00	BREAK	
3:15	**SITING DECISIONS: Current Issues in the Pacific Northwest.**	
	INTRODUCTION	**Ken Brooks**, Director, Div. of Environment, Idaho Dept. of Health and Welfare
	SITING AND THE COMMUNITY: Technology, Risk Perception, and Effective Community Dialogue	
	• Emerging Technologies	**Gaynor Dawson**, ICF Technologies, Inc., WA
	• Community Perception of Risk	**Michael Elliot**, SE Negotiation Network, Georgia Inst. of Technology
	• The Role of Community Involvement	**Alice Shorett**, Triangle Associates, WA
5:15	WRAP-UP	**Bill Ross**
5:30-7:00pm	RECEPTION: No-Host Bar, Cirrus Room (35th floor, Sheraton Hotel)	

Tuesday, October 20, 1987

Morning		
7:30-8:30	REGISTRATION: Coffee and Pastries	
8:30	WELCOME	Andrea Rinliker, Director, Washington State Dept. of Ecology
8:45	**SITING DECISIONS: Current Issues in the Pacific Northwest (cont.)**	
	THE BUSINESS OF HAZARDOUS WASTE MANAGEMENT: How the Market Approaches What's Needed and Where Moderator: Frank Deaver, Tektronix, OR	Gerald Smedes, Rabanco, WA Paul Abernathy, Chem-Waste Management/CSSI, CA David L. Hodge, Envirosafe Services, Inc. of Idaho Roger Nelson, ECOS, WA Alex Cross, Reidel Environmental Technologies, OR
10:20	BREAK	
10:35	AN IN-DEPTH LOOK AT ISSUES - SITING AND EQUITY: A Systems Approach	David Morell, Morell and Assoc. CA
11:20	RESPONDERS What's Happening in NW on Siting - Where We're Headed, Will We Get There?	Pam Crocker-Davis, National Audubon Society, WA Jack Peterson, Idaho Emergency Response Commission
12:00	LUNCHEON ADDRESS Grand Ballroom	TBA
Afternoon		
1:30	MAKING YOUR LOCAL SYSTEM WORK FOR THE HOUSEHOLD AND SMALL BUSINESS GENERATOR: The Anchorage Example	Jim Sweeney, Solid Waste Services Dept, Anchorage, AK
2:00	**WASTE REDUCTION: The Future is Now**	
	WASTE REDUCTION IS HAPPENING IN THE NORTHWEST: It Makes Good Dollars and Sense INTRODUCTION Moderator: Fred Hansen, Director Oregon Dept. of Environmental Quality	Kirsten Oldenburg, Congressional Office of Technology Assessment Kirk Thomson, The Boeing Company, WA John Harlan, Intel Corp, OR George Kelly, One Hour Fireweed Dry Cleaners Anchorage, AK
3:30	BREAK	
3:45	THE REMAINING BARRIERS: Can Business and Government Get a Handle on Them?	Joan Cloonan, JR Simplot, ID
4:30	KEY ELEMENTS: a Waste Reduction Model for the Pacific Northwest	Fred Hansen
5:00	WRAP-UP	Bill Ross

Tuesday Evening Session

7:30	LEGISLATIVE ROUNDTABLE: A Look At What's Happening and What's Feasible	Legislators, State & Prov. Dir., and Regional Admin.

Wednesday, October 21, 1987

Morning		
8:00-8:30	Coffee and Pastries	
8:30	WELCOME	**Dennis Kelso,** Commissioner, Alaska Dept. of Environmental Conservation
8:50	FUTURE DIRECTIONS: Next Steps for the Pacific Northwest Small Group Sessions - Participant Analyses of Conference Information and White Paper	
10:30	BREAK	
10:45	Brief Report(s) on Small Group Discussion Sessions	
12:00	CLOSING REMARKS	**Robie G. Russell**
12:15	ADJOURN	

REGISTRATION: The symposium fee of $85.00 includes one luncheon, coffee/pastry breaks, conference materials, and the post-conference report. **To register,** please fill out the form below and mail to IES, UW as shown. If you are unable to attend or send a substitute, a refund of the registration fee, less $20.00 for handling, will be made if written request is received by October 15, 1987.

HOTEL ACCOMMODATIONS: Please make your own; mention this symposium.

Sheraton Hotel, 1400 Sixth, Seattle (206/621-9000): Special corporate rate, $75 single or double, (plus 12.9% tax), per night.

Crowne Plaza Hotel, Sixth & Seneca, Seattle (206/464-1980): Special government rate for government employees with ID.

MORE INFORMATION: Polly Dyer, Cont. Environ. Educ. Dir., IES, UW (206/543-1812)

REGISTRATION FORM Hazardous Waste Management October 19, 20, & 21, 1987

Registration Fee ..... $85.00 $_____

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Return to: Hazardous Waste Management Symposium; Institute for Environmental Studies; 200 Engineering Annex, FM-12; University of Washington; Seattle, WA 98195

APPENDIX VIII

DATA/CAPACITY, WASTE REDUCTION AND SITING EFFORTS:

State Program Highlights

APPENDIX VIII

INTRODUCTION

The purpose of this paper is to provide a backdrop for discussions at the October 19-21, 1987 Symposium, "A Positive Future Hazardous Waste Management in the Pacific Northwest." Providing a legislative and regulatory background may help participants with discussions regarding current hazardous waste management efforts in the region. It will also hopefully help focus attention on areas for future action.

This paper highlights elements of the data/capacity, waste reduction and siting legislation, regulations and processes in Alaska, Idaho, Oregon and Washington.

It includes a narrative discussion of data/capacity, waste reduction and siting efforts as well as two figures, one on siting and one on waste reduction. Several points are worth noting:

(1) The two figures (Figures 1 and 2) describe state efforts highlighting distinctive features of the state programs. For instance, EPA regulations do not address siting process and states have their own siting requirements.

(2) Although highlighting state-level activities (legislative, regulatory), the figures do not cover efforts underway at the local level. For instance, the Alaska Health Project's Waste Reduction Assistance Program, discussed in the narrative, is not identified in Figure 1. The purpose of the figures is to provide a comparison of state-level activities and to highlight the basic legislative and regulatory structures in place.

(3) Neither the narrative nor the figures presume to be comprehensive in their treatment of all data, waste reduction or siting issues. Rather, they attempt to highlight information most likely to be of use to the decision-makers wrestling with issues addressed at the symposium.

(4) No figure was prepared for data capacity, in large part because there is not an extensive statutory and regulatory framework for this at the state level. This should not suggest the data/capacity issue is less significant than siting and waste reduction, however.

SUMMARY OF DATA/CAPACITY STATUS IN THE REGION

Of the four states in Region 10 Washington and Oregon are authorized to conduct the RCRA hazardous waste program and currently regulate a greater universe of hazardous waste than that required by EPA. Alaska and Idaho have hazardous waste regulations in effect but have not yet received authorization for the hazardous waste program from the EPA.

Current federal regulations require generators and treatment, storage, and disposal (TSD) facilities to submit biennial reports covering facility activities for each even numbered year. This report includes information on the types and volumes of waste generated, treated, stored or disposed of during the year. In authorized states this information is submitted to the state agency and then reported to EPA. In non-authorized states, the reports are submitted directly to the EPA. In addition, states may collect and maintain additional generator and TSD data, either in more detail or on a more frequent basis, than currently required by EPA. Alaska is currently the only state not maintaining a special data base for generators and TSDs. Washington and Oregon have computerized this data, while Idaho has not. Only Washington collects any kind of TSD capacity information such as end of year storage capacity and only Washington has done any kind of waste generation forecast models. Finally, with regard to waste minimization all Region 10 states, except Alaska, have some sort of a waste minimization strategy in place and both Oregon and Washington are developing waste minimization regulations or policies.

The EPA is currently in the process of addressing a number of inadequacies and inconsistencies in its current hazardous waste data management system. The new system being developed (titled RCRIS) may be operational in FY 89 and all Region 10 states plan to adopt the system if its current inadequacies are corrected and funding levels to operate the system are sufficient. The system as presently designed will be able to collect current data information from a variety of sources including state data. Whether it has the ability to adequately assess capacity has yet to be determined.

SUMMARY OF WASTE REDUCTION ACTIVITIES IN THE REGION

Alaska

The Department of Environmental Conservation currently has no formal program in existence to promote waste reduction in the state. Initial planning efforts to establish a state waste reduction program have begun. Lack of explicit statutory direction and funding are the principal reasons for not having a program.

The Alaska Health Project (AHP) currently operates a Waste Reduction Assistance Program (WRAP) which provides information and technical assistance and conducts on-site audits for the small business community. WRAP is a pilot project that was designed and implemented under an EPA Region 10 grant. AHP recently received additional federal assistance from Region 10 to continue the WRAP program during the 1988 federal fiscal year. AHP also operates the small business Hazardous Materials Management Project (HMMP)

which provides education outreach and research on waste reduction and hazardous materials. A manual is being developed under HMMP to promote waste reduction in Alaskan small businesses. The Small Business Development Center is assisting AHP in disseminating various HMMP information materials to small businesses in Alaska. HMMP is a three-year project funded by a private foundation. AHP is a private non-profit organization located in Anchorage, Alaska.

Idaho

The Idaho Department of Health and Welfare currently has no formal program in existence to promote waste reduction in the state. Idaho recently adopted a state hazardous waste management plan which was mandated by the State Hazardous Waste Facility Siting Act of 1985. One of the goals included in the plan is to encourage recycling, reuse, reduction, recovery and treatment of hazardous wastes. The Governor has publicly committed to implement it vigorously, including its emphasis on waste reduction. A total of 2 FTEs was appropriated in SFY 88 to begin implementing the overall plan.

Oregon

The Oregon Department of Environmental Quality (ODEQ) recently prepared a hazardous waste reduction plan to guide implementation of its newly established waste reduction program. Oregon's waste reduction program includes source reduction and recycling. When fully implemented, the program will have the following components: (1) information outreach; (2) education/technical assistance; (3) research grants; and (4) financial assistance. Although most elements of the program will be administered by ODEQ, the technical on-site assistance component of the program (waste reduction audits) will be conducted by a nonregulatory agency or trade association. The ODEQ program is currently funded by the state general fund at a level of 1.5 FTEs for the next biennium. Additional staff persons (up to a total of 5 FTEs) are expected to be hired in the future. ODEQ recently sponsored a conference on waste reduction in conjunction with the Association of Oregon Industries and American Electronics Association on August 18, 1987.

Washington

The Washington Department of Ecology (WDOE) currently provides technical assistance on a limited basis to industry concerning hazardous waste management and recycling. While considerable planning efforts have been conducted concerning the design and implementation of a state waste reduction program, primarily as a result of Substitute Senate Bill (SHB 4245) which established waste reduction as the top priority for managing hazardous waste in Washington, a waste reduction program has not

been established to date. Lack of resources are the principal reason for not having a program.

SITING

Alaska

Alaska's statute was passed in 1981 and draft regulations were proposed in March 1987. The statute requires the state to evaluate and select potential sites for hazardous waste management. The regulations require the applicant of any proposed hazardous waste facility to notify the public of its intent, and specifically to obtain a written agreement with the borough or municipal government describing how the applicant will monitor operations both on-site and off-site; respond to on-site accidents and emergencies; assure safe transportation of wastes to the site; and mitigate for decreases in property values and address conditions that adversely affect agriculture or natural resources. Also, Alaska's Department of Environmental Conservation (ADEC) may appoint an advisory committee to assure that there is a forum for citizen comments on the application. Such a committee must prepare a report summarizing citizen concerns and how the applicant will address the concerns. This report may substitute for the agreement with the local government mentioned above.

If adopted, Alaska's regulations would establish setback requirements so that no hazardous waste facility be located in a critical habitat area, state game refuge, state game sanctuary, state range area, national wildlife refuges, national monuments, national parks, designated wild and scenic rivers, critical groundwater management areas, sole source aquifers, or high risk area from seismic, volcanic, steep inclines, floods, tsunamis,

The applicant is required to submit a risk assessment and classify the assessment as to "safe" (10^{-6}), "intrinsically unsafe" (10^{-4}), or "safe with provisions" (10^{-5}). The applicant is required to demonstrate financial responsibility (using Federal regulations) and document any previous compliance history. There are additional requirements for proposed hazardous waste incinerators including, for example, one year of ambient air quality data and a projection of expected air quality after the facility is built.

The regulations require the applicant to submit specific geotechnical and hydrologic information and, for land facility and underground injection well applicants, to make certain demonstrations regarding the safety of geologic and hydrologic conditions.

Idaho

Idaho's statute was passed in February 1985, and requires a hazardous waste management planning commission, consisting of 17 people representing diverse geographic areas of the state and specified by statute as to representation, to develop a hazardous waste siting management plan. The plan is required to provide for geographic distribution of treatment, storage or disposal (TSD) facilities and may instruct Idaho's Department of Health and Welfare (IDHW), and Idaho's Department of Water Resources and Transportation to conduct studies of waste inventory, waste practices, needs, incentives for cooperation, and alternative methods for treatment and disposal of hazardous waste.

A plan has been developed and was adopted by the Legislature in March 1987. It directs IDHW to conduct educational programs regarding the public's responsibility for generating hazardous waste, to investigate procedures to establish household hazardous waste collection, segregation, treatment, and disposal, and directs local government to establish community information committees in the city or county where a new facility is proposed. In the area of alternative technologies, the plan directs the Idaho Legislature to evaluate tax incentives, foster research and development programs, and by directive to IDHW, limit land disposal of wastes that are amenable to alternative technologies, and make processing alternative technology permit applications a high priority.

The plan suggests encouraging communication among states surrounding Idaho regarding siting and suggests that the state designate specific routes, favoring interstates and major highways for the transportation of hazardous waste. The plan notes that local government approval should be required regarding the designation of non-state highways for hazardous waste transport.

The plan suggests that the Legislature either give fee authority to local city and county governments or establish a development fee as a permit condition to offset impacts of a hazardous waste management facility. The plan reinforces the concept of privately owned or operated facilities (as opposed to publicly owned or operated) and suggests the IDHW encourage the development of receiving, transfer, and storage facilities for small quantity generators. The plan states that the licensing procedure should be better coordinated with state and federal permitting processes.

With regard to insurance, the plan suggests that the Idaho Legislature implement mechanisms for affordable environmental impairment insurance, such as tort law reform, state insurance fund, or regulatory control of insurance rates. The plan recommends that the state establish a state trust fund for post-closure

cleanup of abandoned sites and for emergency cleanup purposes, and that adequate funding be provided for state departments for hazardous waste management.

The plan also sets forth siting criteria which are identified as numerous hydrogeological and demographic characteristics, and suggests the Legislature establish incineration siting criteria. Finally, the plan also suggests the Legislature adopt legislation to allow state control of PCB waste disposal consistent with the federal Toxic Substances Control Act.

With regard to licensing new facilities, Idaho's statute requires that a 10 member site review panel with representation from the state and the public be established to receive public input early in the permitting process and to approve, deny, or add provisions to the siting license to mitigate public concerns.

The statute provides for state-preemption of local government. The statute also provides for district court review of property loss claims, if these claims are brought not later then nine months after approval of the permit application.

Oregon

Oregon's statute was passed in June 1985 and regulations were adopted in Spring 1986. The regulations specify a three step permitting procedure which require the applicant (a) to request and obtain authority to proceed, (b) submit and obtain a land-use compatibility statement from local government and state, and (c) to submit an application and obtain a permit.

An interesting component to Oregon's process is the requirement of the applicant to provide information to allow the Oregon Department of Environment Quality (ODEQ) to make a finding that there is a "need" for the facility. "Need" is defined by the regulations as (1) lack of adequate current treatment or disposal capacity to handle hazardous waste or PCB generated by Oregon companies, (2) the proposed facility's operation would result in a higher level of protection of the public health and safety or environment, or (3) the proposed facility's operation will significantly lower treatment or disposal costs to Oregon companies, excluding transportation costs within states that are parties to the Northwest Interstate Compact on Low-Level Radioactive Waste Management. In addition, to establish "need," the proposed facility must significantly add to the range of hazardous waste or PCB management technologies already employed at a permitted treatment or disposal facility in states that are parties to the Northwest Interstate Compact on Low-Level Radioactive Waste Management. Notwithstanding the "need determination," ODEQ may deny a permit, if ODEQ finds the capacity at other facilities negates the need for a particular facility in Oregon.

The regulations contain specific requirements regarding appropriate facility size (to match projected need), and they require best available technology. The regulations also contain setback requirements, and requirements to use a Groundwater Quality Protection Evaluation Matrix as a screen for locating proposed facilities. The applicant must demonstrate financial capability as specified in the regulations, and compliance history as defined in the regulations. The regulations contain specific land-use findings for local government to consider.

Community participation is highlighted in the regulations, with the requirements that the Director of ODEQ appoint a committee of citizens composed at least partly by residents living near to or along transportation routes to, the proposed facility site, and part by nominees of local government. The committee is charged with providing a forum for citizens' concerns and for preparing a report summarizing the concerns and the manner in which the company is addressing the concerns. The regulations also recommend that local government and the applicant consider negotiating an agreement appropriate for the potential impact. Mitigation possibilities such as special monitoring both on and off-site, for example, are mentioned in the regulations.

Washington

Washington's statute was passed in July 1985. It requires the Washington Department of Ecology (Ecology) to develop a state hazardous waste management plan to include waste generating forecasts, capacity needs assessment, methods for promoting the hazardous waste management priorities set forth by statute (minimization of hazardous waste, for example), and citizen involvement. Ecology expects the plan to be completed by June 1988.

The statute established state preemption authority for disposal and incineration facilities, while also providing a key role for local governments in hazardous waste management and in citizen proponent negotiations (discussed below). Specifically, local governments are required to develop local hazardous waste management plans, and to designate local land use zones for storage and treatment facilities. One million dollars in grants are available to assist local governments in accomplishing these objectives and the state is required to develop guidelines to assist local governments in this endeavor.

The statute also requires Ecology to promulgate siting standards. Ecology issued interim siting standards in January 1987, and expects final standards to be issued by the end of the calendar year. The law lists fourteen factors that may be considered in establishing siting standards (such as geology, transportation, etc.).

The statute also contains provisions concerning citizen proponent negotiation. The state has hired two professional mediators/negotiators to aid in preparing a guidance report on citizen proponent negotiation. The report will be designed to aid users (e.g., citizens, developer, and local government) on how citizen proponent negotiation may work. The report should be available by fall. Ecology is authorized by statute to issue regulations on negotiation processes and to spend money on it. Ecology is also intended to serve as an information clearinghouse on the subject.

FIGURE 1. WASTE REDUCTION

State	Why Program Established	Emphasis Placed On Waste Reduction	Source Reduction	Recycling/ Re-use	Economic Incentives	Public Information Programs
Alaska	No program currently exists.	No indication given.	No formal statutory or regulatory plan.	No formal program.	No formal program.	No formal program.
Idaho	To reduce the expense to both industry and society. The Idaho Hazardous Waste Management Plan which was recently adopted by the legislature has as its mission to provide for the safe and effective management of hazardous wastes. The committee which formulated the plan was organized pursuant to I.C. § 39-5805.	Listed as one among many hazardous waste management options in State Siting Act and Hazardous Waste Management Plan.	Recently adopted legislation lists source reduction as one of several facets of an overall waste management plan.	Recent legislation lists recycling and reuse as important parts of an overall waste management plan.	Hazardous Waste Management Plan provides that the legislature should consider tax credits and tax free bonds for construction of alternative technology facilities.	The Idaho Hazardous Waste Management plan calls for public hazardous waste workshops, pamphlets, videos and slides produced in laymen's terms, educational seminars and TV and radio features. This public information is directed toward the overall plan, not specifically at waste reduction.

FIGURE 1 (Cont.) WASTE REDUCTION

State	Why Program Established	Emphasis Placed On Waste Reduction	Source Reduction	Recycling/ Re-use	Economic Incentives	Public Information Programs
Oregon	In hazardous waste statutes has priority over other hazardous waste management practices. Specific reasons for waste reduction (as listed in Oregon Revised Statutes 466 et seq., and DEQ's Hazardous Waste Reduction Program Plan) include: more efficient use of resources, a decrease in waste management and regulatory compliance costs, reduction of wastewater treatment costs and a reduction in the risks to public health.	The statutes and regulations do not indicate the relative importance of waste reduction vis-a-vis other management options, but DEQ's report indicates that Oregon considers waste reduction a top priority.	Hazardous Waste Management Regulations mention source reduction, but do not give a specific detailed plan. The Hazardous Waste Reduction Program Plan prepared by Oregon DEQ has source reduction as a goal to be achieved by input substitution, product reformulation, product process redesign and improved operation and maintenance.	Mentioned as a priority in Hazardous Waste Management Regs., but more fully described in DEQ's Hazardous Waste Reduction Plan Program.	DEQ's report does not specifically provide for economic incentives, but does call for financial assistance.	No formal program within statutes or regulations, but DEQ's Hazardous Waste Reduction Program plan calls for a quarterly newsletter, production and distribution of waste reduction information, a waste reduction reference library, and a toll-free hotline. DEQ implementation of the information/ education component of the program plan officially began in July, 1987.
Washington	No program currently exists. Study was mandated by RCW 70.105.150, 70.105.160, and 70.105.170. DOE published a comprehensive report on July 1, 1986, but its provisions have not yet been adopted as statutes or regulations.	Number one priority in legislative declaration. See RCW 70.105.150(1)(a).	Waste Management priorities established by statute. Hazardous waste section of the Dept. of Ecology published a comprehensive report in July 1986 covering both policy and technical waste reduction plans.	Mentioned as a priority in statute, but no specific regulations have been adopted. Hazardous waste section of the Dept. of Ecology has published report which lists recycling and re-use as viable waste management options.	Not specifically authorized by statute, but DOE's plan calls for higher land disposal fees so that generators will have more economic motivation to change their waste management practices to a more environmentally sound/ preferred method.	No formal program as yet, although the statute authorizes a hazardous waste hotline and provides that DOE must implement a plan or program to provide information and education about hazardous waste. DOE's plan calls for a consultative business outreach program, an information waste exchange, technical workshops, education and information assistance, an award program, and a technical resource center. DOE currently provides technical assistance on a limited basis to industry concerning hazardous waste management and recycling.

FIGURE 1 (Cont.) WASTE REDUCTION

State	Educational/Technical Assistance	Research Grants/ Financial Assis-
Alaska	No formal program currently exists	No formal program in existence.
Idaho	No formal program as yet, but the Idaho Hazardous Waste Management Plan lists educational and technical assistance as goals.	The Hazardous Waste Management Plan indicates that Idaho Universities should pursue alternative waste management technologies, but makes no specific provision for research grants.

FIGURE 1 (Cont.) WASTE REDUCTION

State	Educational/Technical Assistance	Research Grants/ Financial Assis-
Oregon	Statute authorizes program which Oregon DEQ has included in its Hazardous Waste Reduction Program. This program calls for on-site hazardous waste reduction assistance, waste reduction seminars and a waste exchange.	DEQ's report provides for creation of a Hazardous Waste Reduction Loan fund for loans to small and medium sized facilities for industrial process improvements that reduce wastes generated at the source.
Washington	No formal program as yet, although the statute authorizes DOE to provide consultative services and technical assistance. DOE's comprehensive plan calls for technical workshops, a consultative service for businesses and a technical resource center.	No formal program in existence, although, DOE's report calls for attractive financing through municipal bonds (which are already specifically authorized under RCW 39.84 et seq.) loans and grants. These incentives are part of a broader incentive program for overall hazardous waste management and are not specifically directed toward waste reduction.

FIGURE 2. SITING IN REGION 10 STATES

State	Statutory/Regulatory Schedules and Authority	Applicability of Siting Rules/ Regulations	Determination of Need	Regulatory Preemption	Permitting Procedures	Community Participation/ Negotiation
Alaska	Draft regulation issued March 31, 1987, have had full public comment and have been issued pursuant to authority of Alaska Statute (AS) 46.03, et seq. They are scheduled for adoption on December 15, 1987, and are currently out for public comment.	Including Owner/ Operator of a hazardous waste management facility which is: (1) a new TSD facility, (2) a Class I underground injection well, (3) required by EPA to obtain a permit, (4) modified to include additional hazardous waste disposal or incineration capacity.	Not formal part of process now. State has conducted a waste stream analysis.	No formal preemption.	Has a preapplication procedure which requires, among other things: 1. published notice of the proposed project, 2. notification of the local government, and 3. a written agreement with the local government. The actual application requires written proof of compliance with the preapplication procedures, aerial maps of the proposed site, and a written summary of citizens concerns and responses	(1) Committee may be appointed by the Dept. of Environmental Conservation. Composed of residents living near or along transportation routes, persons appointed by local government, and other persons with technical skill. Committee prepares written report summarizing citizen concerns and measures operator has taken, or will take, to address them. (2) Community participation required before a person formally submits an application for a hazardous waste management facility permit.
Idaho	The legislature adopted the Hazardous Waste Facility Siting Act, Idaho Code (IC), 39-5801 in 1985. That act largely instructs the department of Health and Welfare to promulgate a more comprehensive Hazardous Waste Management Plan. The plan was adopted in March, 1987.	Persons who construct, expand, enlarge or alter commercial hazardous waste disposal, treatment or storage facilities or any on-site land disposal facilities of certain categories of waste must first obtain a siting license. Owner or operator must obtain such a license.	No formal process.	No formal preemption, but local government cannot categorically bar construction of a hazardous waste treatment and disposal facility.	Hazardous Waste Facilities Sitting Act requires an application containing the name and address of the applicant, location of the facility, certain hydrogeologic and engineering data, risks from transportation, information on the site's impact on community health. Other procedures are delineated throughout the matrix.	The statute requires establishment of a 10 member site review panel with representation from the state and public in order to receive public input early in the process and to approve, deny, or add provisions to the siting license to mitigate public concerns.

FIGURE 2. (Cont.) SITING IN REGION 10 STATES

State	Statutory/Regulatory Schedules and Authority	Applicability of Siting Rules/ Regulations	Determination of Need	Regulatory Preemption	Permitting Procedures	Community Participation/ Negotiation
Oregon	Siting provisions contained in Oregon Administration Rules, Chapter 340, Division 120, adopted March, 1986.	All hazardous waste and PCB treatment and disposal facilities. Most regulations apply to the following: (1) New off-site treatment and disposal facilities for hazardous waste and PCB. (2) New hazardous waste and PCB land disposal facilities located on-site.	Applicant must provide implementation allowing DEQ to make a determination there is a "need" for a facility. A facility is "needed" if: there is a lack of current treatment /disposal capacity to handle Oregon generated wastes, or it will result in a higher level of protection to health and environment, or savings in treatment/disposal costs for Oregon companies.	None specifically provided for.	3-step permitting process: 1. submit a request for and obtain Authorization to Proceed from DEQ. 2. Submit a request for and obtain a land use compatibility statement from local government. 3. Submit an application for and obtain a treatment or disposal permit from DEQ. to resolve con-	Committee of residents, partly appointed by local government, living near to or along transportation routes participates in siting decision considering such issues as special monitoring for community health risks, road improvements, changes in property values and developing a plan flicts and disagreements between the community and the operator.
Washington	1984-85 Revisions to state law established waste management priorities, capacity study, siting standards, local programs, Citizen Proponent Negotiations (CPN), preemption and private sector role. Interim siting standards for disposal/incineration facilities are in place as are guidelines for local government programs (zoning, grants). Final siting standards and CPN are under development.	Interim siting standards apply to owners and operators of landfills, incinerators, land treatment facilities, surface impoundments which will be closed as a landfill and waste piles to be closed as landfills (preempted facilities) which are required to obtain interim or final status permits under WAC 173-303-805/806.	No formal "need" determination is provided for, although Department is required to develop a hazardous waste management plan including: waste generation forecasts, capacity needs assessment, and methods to implement the statutory waste management priorities.	State preemption authority to approve, deny or regulate disposal and incineration facilities, although key roles are provided for local governments in hazardous waste management and citizen proponent negotiations.	Owners and operators applying for a final facility permit must complete, sign and submit that application to DOE. The information required includes such information as certain technical data, design drawings and engineering studies, a general description of the facility, and a description of security procedures. Environmental requirements must also be met.	Negotiation, mediation and other conflict resolution methods are encouraged when siting disputes occur. Ecology is now designing a process for (CPN). Public hearings are required when a draft permit and environmental assessment is issued.

FIGURE 2. (Cont.) SITING IN REGION 10 STATES

State	Sizing Restrictions/ Waste Exclusion	Public or Private Ownership	Land Use Compatability Showing	Mitigation of Potential Risks	Host Community Impact/Property	Risk Assessment	Response to Emergencies
Alaska	None.	Both public and private ownership contemplated by hazardous waste facility siting provisions.	Application must include aerial photographs, and must demonstrate that the hazardous waste will not escape the site for 1000 years and will not make contact with the nearest freshwater acquifer for 1000 years. Several geologic and seismic reports must also be submitted showing containment qualities of chosen site. Certain locations are excluded from consideration (special habitats, ports, monuments and wetlands).	Applicant must obtain a written agreement with municipal or borough government which describes how the facility will meet specified operating criteria necessary for protection of public health and the environment.	In addition to those requirements listed elsewhere, applicants are required to obtain an agreement with local government describing how owner/ operator will mitigate for changes in property values near facility.	Applicant for permit of all hazardous waste management facilities (except storage) must submit a report identifying risk facility poses to public on a scale running from safe (10^{-6} risk) to intrinsically unsafe (10^{-4} risk). See also Fed. Reg. Vol. 51, No. 185, Wed., Sept. 24, 1986.	Contained in permitting procedure. Owner/Operator describes how the facility will respond to on-site emergencies and assure safe transportation.
Idaho	None, but Hazardous Waste Management Plan provide that the Dept. of Health and Welfare should consider placing restrictions on the types of wastes accepted for disposal and treatment based inpart on measures taken by other states. Land disposal ban restrictions in place for solvents, dioxins, and California list.	The Hazardous Waste Management Plan encourages Private ownership, though both public and private ownership were apparently contemplated.	No specific regulations but statute indicates that engineering and hydrology information must be contained in the Siting License Application.	Siting license application must give information showing that harm to scenic, historic, cultural, and recreational values and risk of accidents during transport will not be substantial or can be mitigated.	An owner of real property who is adversely affected by a facility may be compensated by the facility owner/operator in an amount equal to his loss.	Application must address risks from transportation and information on site impact on community health. License conditions can be added to address these concerns.	No specific provisions.

FIGURE 2. (Cont.) SITING IN REGION 10 STATES

State	Sizing Restrictions/ Waste Exclusion	Public or Private Ownership	Land Use Compatability Showing	Mitigation of Potential Risks	Host Community Impact/Property	Risk Assessment	Response to Emergencies
Oregon	Facility must have capacity, in conjunction with other facilities, to treat or dispose of waste generated over the next 10 years at a minimum in Oregon, and, at a maximum, for wastes from the 8 NW compact states. If facility is larger than what is needed in Oregon, owner/operator must show additional size is needed to make the facility economically feasible.	Both public and private ownership contemplated by siting provisions.	Applicant must obtain local land use approval. Also, off-site facilities must be at least 3 miles from larger population areas (10,000 people or greater). Facilities must be one mile from schools, churches, commercial centers, parks, scenic view sites, resorts, etc. Provision also contains locational restrictions based on ecology, geology, and seismology considerations.	Regulations recommend local government and the applicant consider negotiations to mitigate impact.	DEQ recommends that the local government and the applicant consider negotiating an agreement which addresses the facility's potential impact on property values near the site.	No specific provisions.	Owner/Operator required to operate an emergency response team responsible for responding to spills within 50 miles of the facility.
Washington	(1) Extremely hazardous wastes cannot be landfilled (70 RCW 105.050) (2) Land disposal regulations are being drafted.	The most recent siting provisions establish primary private sector role in providing waste management services.	Several requirements relating to topographical and geologic considerations such as distance from aquifers, fault lines, unstable slopes, coasts, surface waters, and areas where the soil has subsided. Distance of public institutions, parks, and other high density population areas is also a factor in siting decision.	No specific provisions, but several provisions in Draft Location Standards address minimizing potential risks associated with hazardous waste facilities.	No specific provisions in Interim Siting Standards or Draft Location Standards. These issues are an integral part of CPN which are under development.	No specific provisions, but risk assessment implicitly included through the Draft Locational Standards.	Owner/operator required to pay increased cost for fire, hospital and other public facilities. Roads leading to facility will be made safer to trucks carrying waste and increased auto traffic.